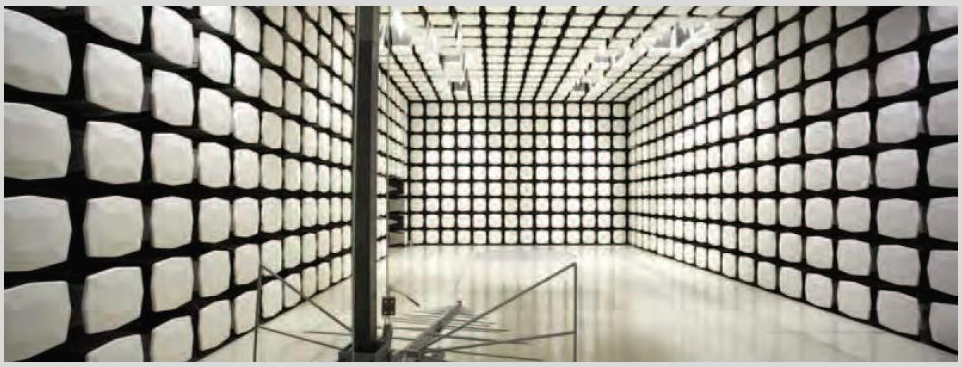
Microsoft Corporation

Model 1631

FCC 15.207:2016
FCC 15.407:2016

Report # MCSO1748



NVLAP Lab Code: 200629-0

This report must not be used to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government of the United States of America. This Report may only be duplicated in its entirety

CERTIFICATE OF TEST

Last Date of Test: April 15, 2016
Microsoft Corporation
Model: Model 1631

Radio Equipment Testing

Standards

Specification	Method
FCC 15.207:2016	ANSI C63.10:2013
FCC 15.407:2016	ANSI C63.10:2013

Results

Method Clause	Test Description	Applied	Results	Comments
6.2	Powerline Conducted Emissions	Yes	Pass	
6.5, 6.6, 12.7	Spurious Radiated Emissions	Yes	Pass	
6.8	Frequency Stability	Yes	Pass	
12.2	Duty Cycle	Yes	Pass	
12.3.2.4	Maximum Conducted Output Power	Yes	Pass	
12.4.1	Emission Bandwidth	No	N/A	Not tested. Applicable to the 5.2, 5.3 and 5.6 GHz bands only.
12.4.2	Occupied Bandwidth	Yes	Pass	
12.4.2	Band Edge	Yes	Pass	
12.5	Maximum Power Spectral Density	Yes	Pass	
KDB 789033 -H	Measurement of Emission at Elevation Angle Higher Than 30 Degrees From Horizon	No	N/A	Not required unless the EUT is a Master device used outdoors.

Deviations From Test Standards

None

Approved By:

Rod Munro, Operations Manager

Product compliance is the responsibility of the client; therefore, the tests and equipment modes of operation represented in this report were agreed upon by the client, prior to testing. The results of this test pertain only to the sample(s) tested. The specific description is noted in each of the individual sections of the test report supporting this certificate of test. This report reflects only those tests from the referenced standards shown in the certificate of test. It does not include inspection or verification of labels, identification, marking or user information.

REVISION HISTORY

Revision Number	Description	Date	Page Number
00	None		

ACCREDITATIONS AND AUTHORIZATIONS

NORTHWEST EMC
REV 2016.3.22

United States

FCC - Designated by the FCC as a Telecommunications Certification Body (TCB). Certification chambers, Open Area Test Sites, and conducted measurement facilities are listed with the FCC.

A2LA - Accredited by A2LA to ISO / IEC 17065 as a product certifier. This allows Northwest EMC to certify transmitters to FCC and IC specifications.

NVLAP - Each laboratory is accredited by NVLAP to ISO 17025

Canada

IC - Recognized by Industry Canada as a Certification Body (CB). Certification chambers and Open Area Test Sites are filed with IC.

European Union

European Commission – Validated by the European Commission as a Notified Body under the R&TTE Directive.

Australia/New Zealand

ACMA - Recognized by ACMA as a CAB for the acceptance of test data.

Korea

MSIP / RRA - Recognized by KCC's RRA as a CAB for the acceptance of test data.

Japan

VCCI - Associate Member of the VCCI. Conducted and radiated measurement facilities are registered.

Taiwan

BSMI – Recognized by BSMI as a CAB for the acceptance of test data.

NCC - Recognized by NCC as a CAB for the acceptance of test data.

Singapore

IDA – Recognized by IDA as a CAB for the acceptance of test data.

Israel

MOC – Recognized by MOC as a CAB for the acceptance of test data.

Hong Kong

OFCA – Recognized by OFCA as a CAB for the acceptance of test data.

Vietnam

MIC – Recognized by MIC as a CAB for the acceptance of test data.

SCOPE

For details on the Scopes of our Accreditations, please visit:
http://www.nwemc.com/accreditations/
http://gsi.nist.gov/global/docs/cabs/designations.html

MEASUREMENT UNCERTAINTY

TMU.2015.07.10

Measurement Uncertainty

When a measurement is made, the result will be different from the true or theoretically correct value. The difference is the result of tolerances in the measurement system that cannot be completely eliminated. To the extent that technology allows us, it has been our aim to minimize this error. Measurement uncertainty is a statistical expression of measurement error qualified by a probability distribution.

A measurement uncertainty estimation has been performed for each test per our internal quality document QM205.4.6. The estimation is used to compare the measured result with its "true" or theoretically correct value. The expanded measurement uncertainty (K=2) can be found included as part of the applicable test description page. Our measurement data meets or exceeds the measurement uncertainty requirements of the applicable specification; therefore, the test data can be compared directly to the specification limit to determine compliance. The calculations for estimating measurement uncertainty are based upon ETSI TR 100 028 (or CISPR 16-4-2 as applicable), and are available upon request.

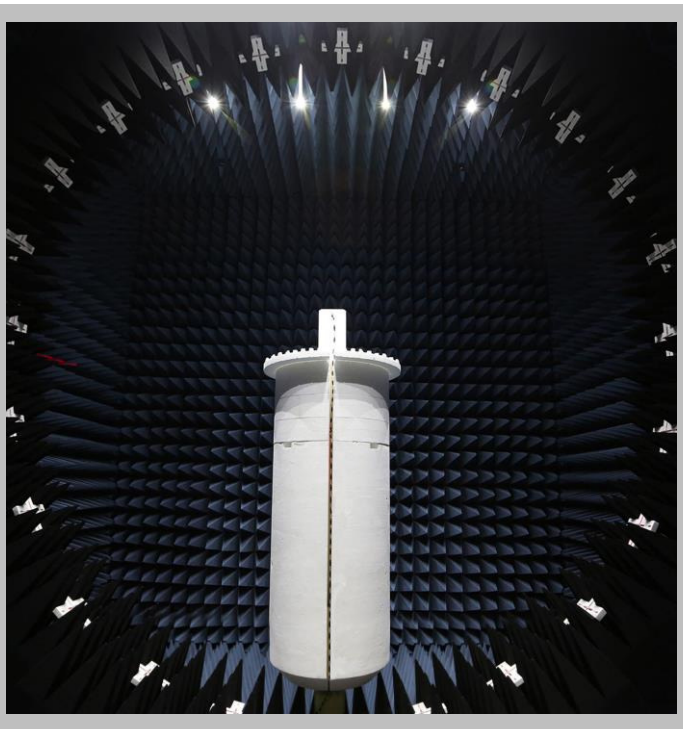
The following table represents the Measurement Uncertainty (MU) budgets for each of the tests that may be contained in this report.

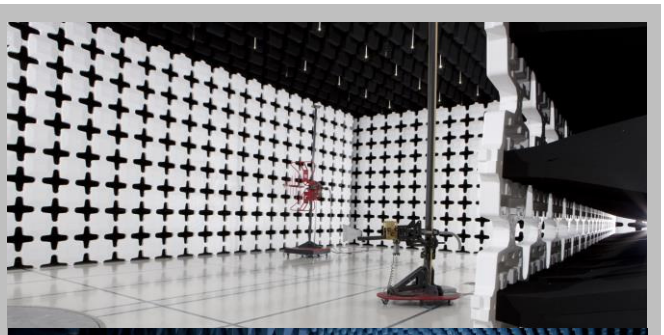
Test	+ MU	- MU
Frequency Accuracy (Hz)	0.0007%	-0.0007%
Amplitude Accuracy (dB)	1.2 dB	-1.2 dB
Conducted Power (dB)	0.3 dB	-0.3 dB
Radiated Power via Substitution (dB)	0.7 dB	-0.7 dB
Temperature (degrees C)	0.7°C	-0.7°C
Humidity (% RH)	2.5% RH	-2.5% RH
Voltage (AC)	1.0%	-1.0%
Voltage (DC)	0.7%	-0.7%
Field Strength (dB)	5.0 dB	-5.0 dB
AC Powerline Conducted Emissions (dB)	2.4 dB	-2.4 dB

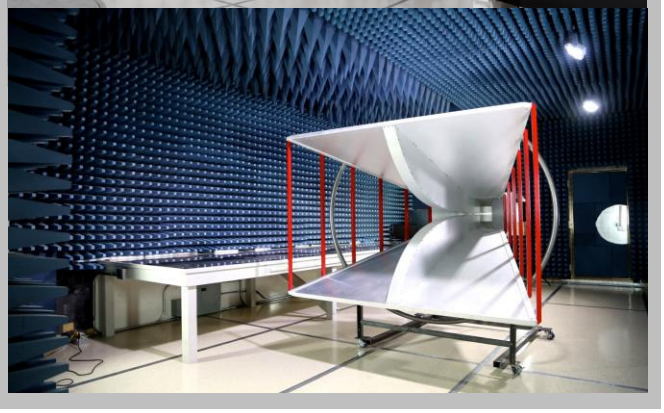
FACILITIES

NORTHWEST EMC
REV 2015.2.19

California	Minnesota	New York	Oregon	Texas	Washington
Labs OC01-13 41 Tesla Irvine, CA 92618 (949) 861-8918	Labs MN01-08, MN10 9349 W Broadway Ave. Brooklyn Park, MN 55445 (612)-638-5136	Labs NY01-04 4939 Jordan Rd. Elbridge, NY 13060 (315) 554-8214	Labs EV01-12 22975 NW Evergreen Pkwy Hillsboro, OR 97124 (503) 844-4066	Labs TX01-09 3801 E Plano Pkwy Plano, TX 75074 (469) 304-5255	Labs NC01-05 19201 120th Ave NE Bothell, WA 98011 (425)984-6600
NVLAP					
NVLAP Lab Code: 200676-0	NVLAP Lab Code: 200881-0	NVLAP Lab Code: 200761-0	NVLAP Lab Code: 200630-0	NVLAP Lab Code:201049-0	NVLAP Lab Code: 200629-0
Industry Canada					
2834B-1, 2834B-3	2834E-1	N/A	2834D-1, 2834D-*2*	2834G-1	2834F-1
BSMI					
SL2-IN-E-1154R	SL2-IN-E-1152R	N/A	SL2-IN-E-1017	SL2-IN-E-1158R	SL2-IN-E-1153R
VCCI					
A-0029	A-0109	N/A	A-0108	A-0201	A-0110
Recognized Phase I CAB for ACMA, BSMI, IDA, KCC/RRA, MIC, MOC, NCC, OFCA					
US0158	US0175	N/A	US0017	US0191	US0157







PRODUCT DESCRIPTION

Client and Equipment Under Test (EUT) Information

Company Name:	Microsoft Corporation
Address:	One Microsoft Way
City, State, Zip:	Redmond, WA 98052
Test Requested By:	Mike Boucher
Model:	Model 1631 (C2PC to FCC ID:C3K1631)
First Date of Test:	April 12, 2016
Last Date of Test:	April 15, 2016
Receipt Date of Samples:	April 11, 2016
Equipment Design Stage:	Production
Equipment Condition:	No Damage

Information Provided by the Party Requesting the Test

Functional Description of the EUT:
802.11ac radio with 2x2 MIMO installed within a Portable Computing Device.

Testing Objective:
To demonstrate compliance of the 802.11 radio under FCC 15.407 for operation in the 5.8 GHz band.

CONFIGURATIONS

Configuration MCSO1748- 1

Software/Firmware Running during test	
Description	**Version**
Wifi Tool	2.7.4

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Portable Computing Device	Microsoft Corporation	Model 1631	041152140753

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Laptop PC	Lenovo	Thinkpad E545	5414957
USB-Ethernet Adapter	Cisco	USB300M	CU906M703796
AC Adapter (EUT)	Microsoft Corporation	Model 1625	0D130C0J4TB57
AC Adapter (Laptop)	Lenovo	ADLX65NDT2A	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
Ethernet	No	1.3m	No	Laptop PC	USB-Ethernet Adapter
USB	No	0.1m	No	Portable Computing Device	USB-Ethernet Adapter
AC Power	No	1.0m	No	AC Mains	AC Adapter (EUT)
AC Power	No	0.5m	No	AC Mains	AC Adapter (Laptop)
DC Power	No	2.0m	No	AC Adapter (EUT)	Portable Computing Device
DC Power	No	2.0m	Yes	AC Adapter (Laptop)	Laptop PC

CONFIGURATIONS

Configuration MCSO1748- 2

Software/Firmware Running during test	
Description	**Version**
Wifi Tool	2.7.4

EUT			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
Portable Computing Device	Microsoft Corporation	Model 1631	041152140753

Peripherals in test setup boundary			
Description	**Manufacturer**	**Model/Part Number**	**Serial Number**
USB-Ethernet Adapter	Cisco	USB300M	CU906M703796
AC Adapter (EUT)	Microsoft Corporation	Model 1625	0D130C0J4TB57
Detachable Keyboard	Microsoft Corporation	X889242-BBH	000596140354
Headphones	Skull Candy	None	None

Cables					
Cable Type	**Shield**	**Length (m)**	**Ferrite**	**Connection 1**	**Connection 2**
USB	No	0.1m	No	Portable Computing Device	USB-Ethernet Adapter
AC Power	No	1.0m	No	AC Mains	AC Adapter (EUT)
DC Power	No	2.0m	No	AC Adapter (EUT)	Portable Computing Device
Ethernet	No	1.3m	No	USB-Ethernet Adapter	Unterminated
Headphone	No	1.4m	No	Portable Computing Device	Headphones
HDMI	No	1.7m	No	Portable Computing Device	Unterminated

MODIFICATIONS

NORTHWEST EMC
2014-12-10

Equipment Modifications

Item	Date	Test	Modification	Note	Disposition of EUT
1	4/12/2016	Band Edge	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
2	4/13/2016	Maximum Power Spectral Density	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
3	4/13/2016	Occupied Bandwidth	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
4	4/13/2016	Maximum Conducted Output Power	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
5	4/13/2016	Duty Cycle	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
6	4/13/2016	Frequency Stability	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
7	4/13/2016	Powerline Conducted Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	EUT remained at Northwest EMC following the test.
8	4/15/2016	Spurious Radiated Emissions	Tested as delivered to Test Station.	No EMI suppression devices were added or modified during this test.	Scheduled testing was completed.

POWERLINE CONDUCTED EMISSIONS

WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

TEST DESCRIPTION

Using the mode of operation and configuration noted within this report, conducted emissions tests were performed. The frequency range investigated (scanned), is also noted in this report. Conducted power line measurements are made, unless otherwise specified, over the frequency range from 150 kHz to 30 MHz to determine the line-to-ground radio-noise voltage that is conducted from the EUT power-input terminals that are directly (or indirectly via separate transformer or power supplies) connected to a public power network. Per the standard, an insulating material was also added to ground plane between the EUT's power and remote I/O cables. Equipment is tested with power cords that are normally used or that have electrical or shielding characteristics that are the same as those cords normally used. Typically those measurements are made using a LISN (Line Impedance Stabilization Network), the 50ohm measuring port is terminated by a 50ohm EMI meter or a 50ohm resistive load. All 50ohm measuring ports of the LISN are terminated by 50ohm. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Cal. Due
Cable - Conducted Cable Assembly	Northwest EMC	NC4, HHF, RKD	NC4A	12/28/2015	12/28/2016
LISN	Solar Electronics	9252-50-R-24-BNC	LIM	11/3/2015	11/3/2016
Receiver	Rohde & Schwarz	ESCI	ARE	8/5/2015	8/5/2016

MEASUREMENT UNCERTAINTY

Description		
Expanded k=2	2.4 dB	-2.4 dB

CONFIGURATIONS INVESTIGATED

MCSO1748-2

MODES INVESTIGATED

Transmitting 802.11(ac), MCS0, Mid Channel 157, 5785 MHz, 2x2 MIMO.
Transmitting 802.11(ac), MCS9, High Channel 157/161, 5795 MHz, 2x2 MIMO.
Transmitting 802.11(ac), MCS9, Mid Channel 149/161, 5775 MHz, 2x2 MIMO.

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

EUT:	Model 1631	Work Order:	MCSO1748
Serial Number:	041152140753	Date:	04/13/2016
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	None	Relative Humidity:	30%
Customer Project:	None	Bar. Pressure:	1018 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	MCSO1748-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	2	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

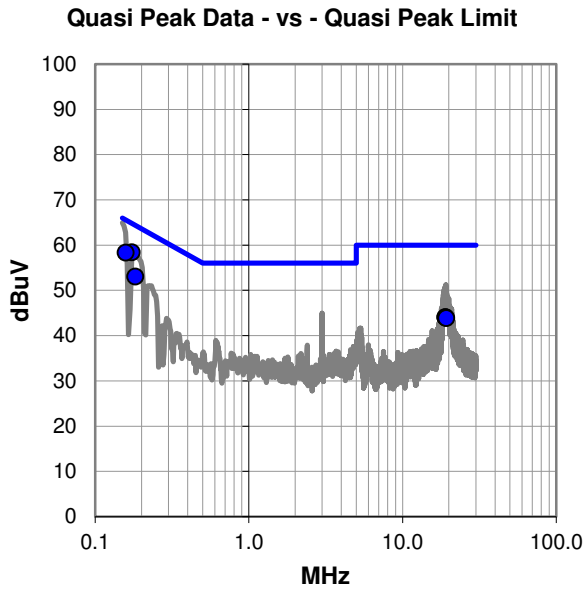
EUT operating in mode that produced the highest overall output power for 20MHz channel BW. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels. Signal setting at > 95% Duty Cycle.

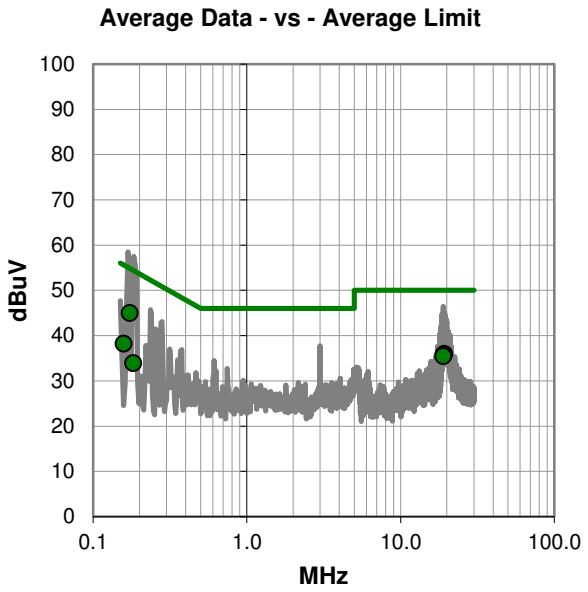
EUT OPERATING MODES

Transmitting 802.11(ac), MCS0, Mid Channel 157, 5785 MHz, 2x2 MIMO.

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

RESULTS - Run #2

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.173	37.9	20.5	58.4	64.8	-6.4
0.158	37.8	20.5	58.3	65.5	-7.2
0.183	32.5	20.5	53.0	64.4	-11.4
18.965	21.8	22.3	44.1	60.0	-15.9
19.126	21.7	22.3	44.0	60.0	-16.0
19.289	21.5	22.3	43.8	60.0	-16.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.173	24.5	20.5	45.0	54.8	-9.7
19.289	13.6	22.3	35.9	50.0	-14.1
19.126	13.5	22.3	35.8	50.0	-14.2
18.965	13.2	22.3	35.5	50.0	-14.5
0.158	17.7	20.5	38.2	55.5	-17.3
0.183	13.4	20.5	33.9	54.4	-20.5

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

EUT:	Model 1631	Work Order:	MCSO1748
Serial Number:	041152140753	Date:	04/13/2016
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	None	Relative Humidity:	30%
Customer Project:	None	Bar. Pressure:	1018 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	MCSO1748-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	3	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

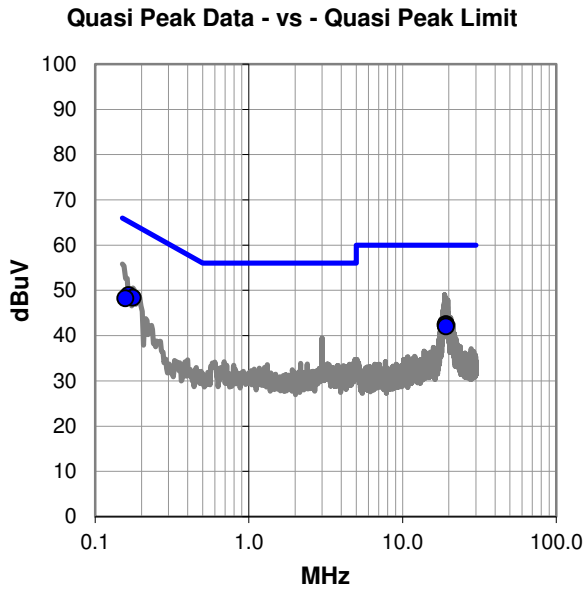
EUT operating in mode that produced the highest overall output power for 20MHz channel BW. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels. Signal setting at > 95% Duty Cycle.

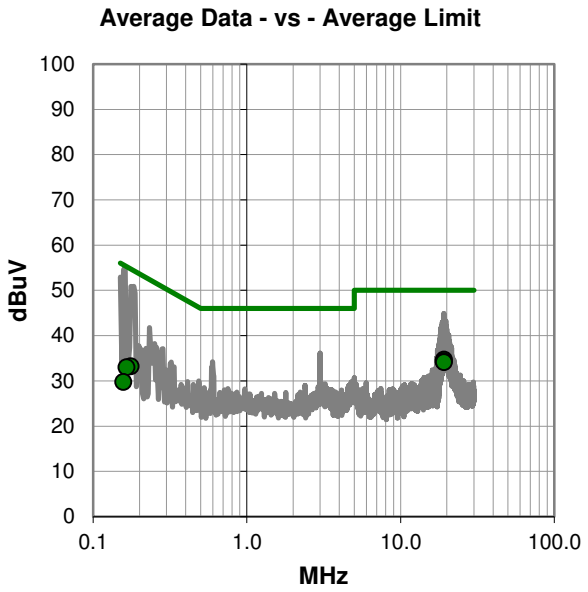
EUT OPERATING MODES

Transmitting 802.11(ac), MCS0, Mid Channel 157, 5785 MHz, 2x2 MIMO.

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

RESULTS - Run #3

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.165	28.4	20.5	48.9	65.2	-16.3
0.175	27.9	20.5	48.4	64.7	-16.3
0.158	27.7	20.5	48.2	65.6	-17.4
19.177	20.2	22.3	42.5	60.0	-17.5
19.060	20.1	22.3	42.4	60.0	-17.6
19.207	19.7	22.3	42.0	60.0	-18.0

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
19.177	12.4	22.3	34.7	50.0	-15.3
19.060	12.0	22.3	34.3	50.0	-15.7
19.207	11.8	22.3	34.1	50.0	-15.9
0.175	12.7	20.5	33.2	54.7	-21.5
0.165	12.5	20.5	33.0	55.2	-22.2
0.158	9.2	20.5	29.7	55.6	-25.9

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

EUT:	Model 1631	Work Order:	MCSO1748
Serial Number:	041152140753	Date:	04/13/2016
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	None	Relative Humidity:	30%
Customer Project:	None	Bar. Pressure:	1018 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	MCSO1748-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	4	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

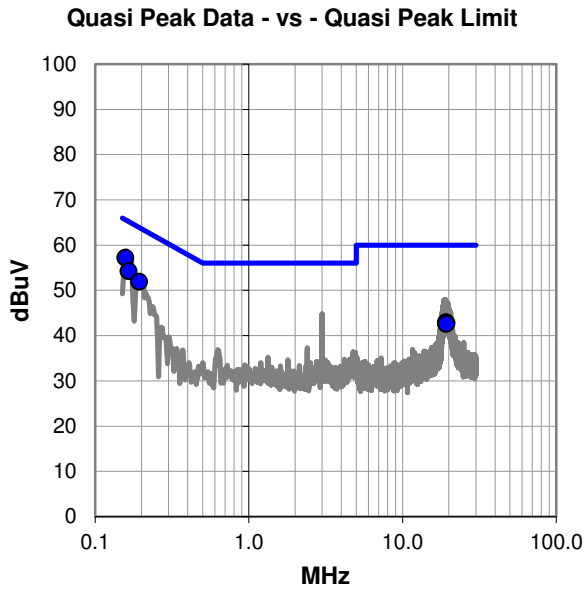
EUT operating in mode that produced the highest overall output power for 40MHz channel BW. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels. Signal setting at > 95% Duty Cycle.

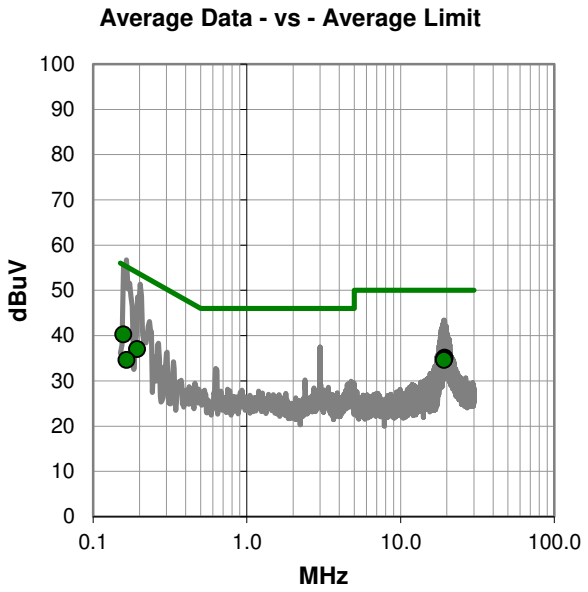
EUT OPERATING MODES

Transmitting 802.11(ac), MCS9, High Channel 157/161, 5795 MHz, 2x2 MIMO.

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

RESULTS - Run #4

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.158	36.7	20.5	57.2	65.6	-8.4
0.165	33.7	20.5	54.2	65.2	-11.0
0.193	31.4	20.5	51.9	63.9	-12.0
19.189	20.6	22.3	42.9	60.0	-17.1
19.363	20.4	22.3	42.7	60.0	-17.3
19.143	20.3	22.3	42.6	60.0	-17.4

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
19.363	12.8	22.3	35.1	50.0	-14.9
19.189	12.5	22.3	34.8	50.0	-15.2
0.158	19.7	20.5	40.2	55.6	-15.4
19.143	12.3	22.3	34.6	50.0	-15.4
0.193	16.5	20.5	37.0	53.9	-16.9
0.165	14.1	20.5	34.6	55.2	-20.6

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

EUT:	Model 1631	Work Order:	MCSO1748
Serial Number:	041152140753	Date:	04/13/2016
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	None	Relative Humidity:	30%
Customer Project:	None	Bar. Pressure:	1018 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	MCSO1748-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	5	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

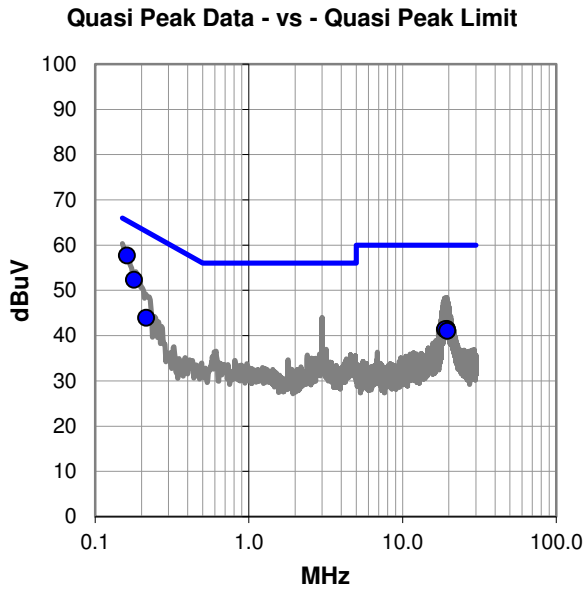
EUT operating in mode that produced the highest overall output power for 40MHz channel BW. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels. Signal setting at > 95% Duty Cycle.

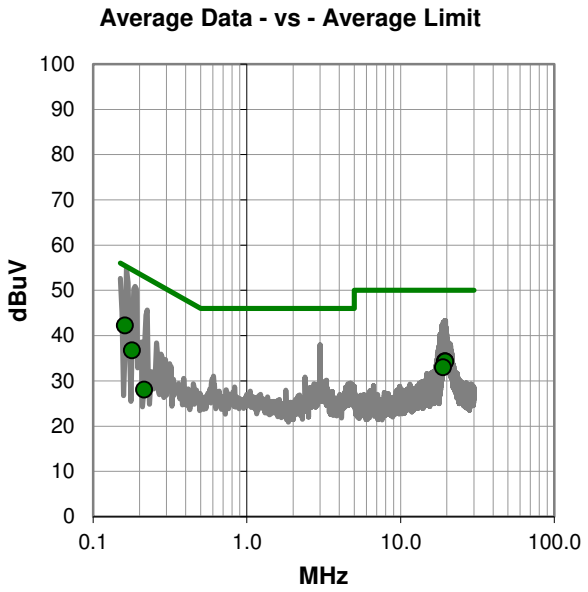
EUT OPERATING MODES

Transmitting 802.11(ac), MCS9, High Channel 157/161, 5795 MHz, 2x2 MIMO.

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

RESULTS - Run #5

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.161	37.2	20.5	57.7	65.4	-7.7
0.179	31.8	20.5	52.3	64.5	-12.2
19.455	19.1	22.3	41.4	60.0	-18.6
18.918	19.1	22.3	41.4	60.0	-18.6
19.552	18.7	22.3	41.0	60.0	-19.0
0.215	23.5	20.5	44.0	63.0	-19.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.161	21.7	20.5	42.2	55.4	-13.2
19.455	12.0	22.3	34.3	50.0	-15.7
19.552	11.9	22.3	34.2	50.0	-15.8
18.918	10.7	22.3	33.0	50.0	-17.0
0.179	16.2	20.5	36.7	54.5	-17.8
0.215	7.6	20.5	28.1	53.0	-25.0

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

EUT:	Model 1631	Work Order:	MCSO1748
Serial Number:	041152140753	Date:	04/13/2016
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	None	Relative Humidity:	30%
Customer Project:	None	Bar. Pressure:	1018 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	MCSO1748-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	6	Line:	High Line	Add. Ext. Attenuation (dB):	0

COMMENTS

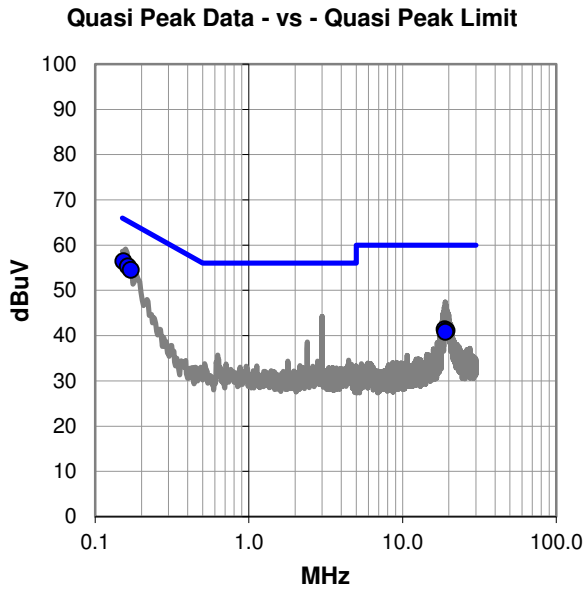
EUT operating in mode that produced the highest overall output power for 80MHz channel BW. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels. Signal setting at > 95% Duty Cycle.

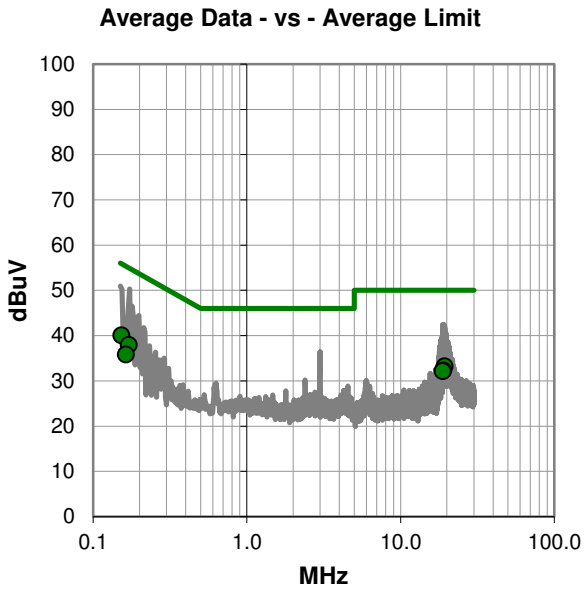
EUT OPERATING MODES

Transmitting 802.11(ac), MCS9, Mid Channel 149/161, 5775 MHz, 2x2 MIMO.

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

RESULTS - Run #6

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.153	35.9	20.5	56.4	65.8	-9.4
0.163	34.8	20.5	55.3	65.3	-10.0
0.171	34.0	20.5	54.5	64.9	-10.4
18.799	19.1	22.3	41.4	60.0	-18.6
19.324	18.8	22.3	41.1	60.0	-18.9
19.017	18.5	22.3	40.8	60.0	-19.2

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.153	19.5	20.5	40.0	55.8	-15.8
19.324	10.9	22.3	33.2	50.0	-16.8
0.171	17.4	20.5	37.9	54.9	-17.0
19.017	10.0	22.3	32.3	50.0	-17.7
18.799	9.9	22.3	32.2	50.0	-17.8
0.163	15.3	20.5	35.8	55.3	-19.5

CONCLUSION

Pass

Tested By

POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC
WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

EUT:	Model 1631	Work Order:	MCSO1748
Serial Number:	041152140753	Date:	04/13/2016
Customer:	Microsoft Corporation	Temperature:	24°C
Attendees:	None	Relative Humidity:	30%
Customer Project:	None	Bar. Pressure:	1018 mb
Tested By:	Richard Mellroth	Job Site:	NC05
Power:	110VAC/60Hz	Configuration:	MCSO1748-2

TEST SPECIFICATIONS

Specification:	Method:
FCC 15.207:2016	ANSI C63.10:2013

TEST PARAMETERS

Run #:	7	Line:	Neutral	Add. Ext. Attenuation (dB):	0

COMMENTS

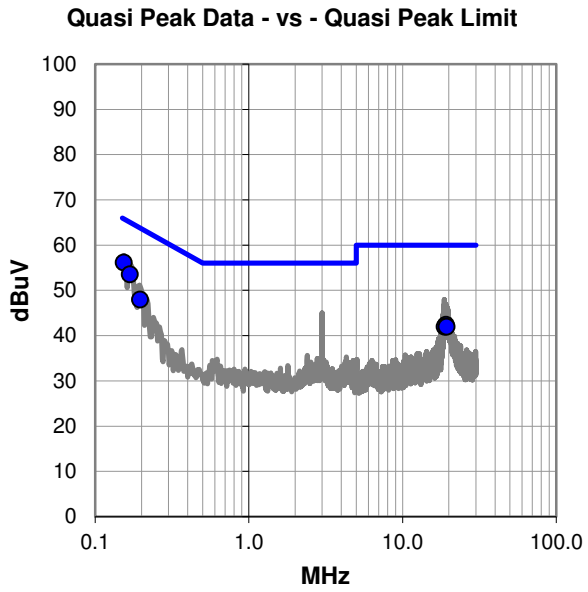
EUT operating in mode that produced the highest overall output power for 80MHz channel BW. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels. Signal setting at > 95% Duty Cycle.

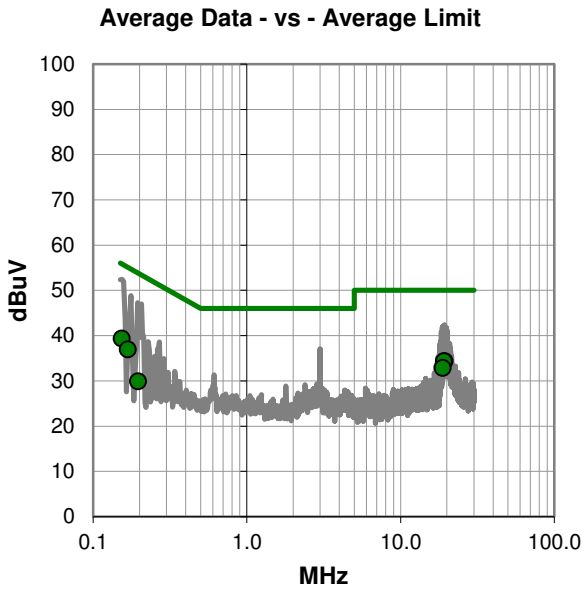
EUT OPERATING MODES

Transmitting 802.11(ac), MCS9, Mid Channel 149/161, 5775 MHz, 2x2 MIMO.

DEVIATIONS FROM TEST STANDARD

None





POWERLINE CONDUCTED EMISSIONS

NORTHWEST EMC

WTD.2016.03.10
PSA-ESCI 2016.03.11, EmiR5 2016.03.11

RESULTS - Run #7

Quasi Peak Data - vs - Quasi Peak Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
0.154	35.6	20.5	56.1	65.8	-9.7
0.168	33.0	20.5	53.5	65.1	-11.6
0.196	27.5	20.5	48.0	63.8	-15.8
19.149	20.1	22.3	42.4	60.0	-17.6
18.824	19.7	22.3	42.0	60.0	-18.0
19.324	19.6	22.3	41.9	60.0	-18.1

Average Data - vs - Average Limit

Freq (MHz)	Amp. (dBuV)	Factor (dB)	Adjusted (dBuV)	Spec. Limit (dBuV)	Margin (dB)
19.324	12.0	22.3	34.3	50.0	-15.7
19.149	12.0	22.3	34.3	50.0	-15.7
0.154	18.8	20.5	39.3	55.8	-16.5
18.824	10.6	22.3	32.9	50.0	-17.1
0.168	16.4	20.5	36.9	55.1	-18.2
0.196	9.4	20.5	29.9	53.8	-23.9

CONCLUSION

Pass

Tested By

SPURIOUS RADIATED EMISSIONS

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data. The test data represents the configuration / operating mode/ model that produced the highest emission levels as compared to the specification limit.

MODES OF OPERATION

Transmitting 802.11(a), 6Mbps, SISO, 20MHz Channel BW
Transmitting 802.11(a), 36Mbps, SISO, 20MHz Channel BW
Transmitting 802.11(a), 54Mbps, SISO, 20MHz Channel BW
Transmitting 802.11(n), MCS0, SISO, 20MHz and 40MHz Channel BW
Transmitting 802.11(n), MCS7, SISO, 20MHz and 40MHz Channel BW
Transmitting 802.11(n), MCS8, 2x2 MIMO, 20MHz and 40MHz Channel BW
Transmitting 802.11(n), MCS15, 2x2 MIMO, 20MHz and 40MHz Channel BW
Transmitting 802.11(ac), MCS0, SISO, 20MHz, 40MHz, and 80MHz Channel BW
Transmitting 802.11(ac), MCS0, 2x2 MIMO, 20MHz, 40MHz, and 80MHz Channel BW
Transmitting 802.11(ac), MCS8, SISO, 20MHz Channel BW
Transmitting 802.11(ac), MCS8, 2x2 MIMO, 20MHz Channel BW
Transmitting 802.11(ac), MCS9, SISO, 40MHz and 80MHz Channel BW
Transmitting 802.11(ac), MCS9, 2x2 MIMO, 40MHz and 80MHz Channel BW

CHANNELS TESTED

Low Channel 149, 5745 MHz, 20MHz Channel BW
Mid Channel 157, 5785 MHz, 20MHz Channel BW
High Channel 165, 5825 MHz, 20MHz Channel BW
Low Channel 149/153, 5755 MHz, 40MHz Channel BW
High Channel 157/161, 5795 MHz, 40MHz Channel BW
Mid Channel 149/161, 5775 MHz, 80MHz Channel BW

ANTENNA CHAINS TESTED

Antenna Chain A, SISO
Antenna Chain B, SISO
Antenna Chain AB, 2x2 MIMO

POWER SETTINGS INVESTIGATED

110VAC/60Hz

CONFIGURATIONS INVESTIGATED

MCSO1748 - 2

FREQUENCY RANGE INVESTIGATED

Start Frequency	30 MHz	Stop Frequency	40 GHz

SAMPLE CALCULATIONS

Radiated Emissions: Field Strength = Measured Level + Antenna Factor + Cable Factor - Amplifier Gain + Distance Adjustment Factor + External Attenuation

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval
Analyzer - Spectrum Analyzer	Keysight	N9010A	AFO	6/23/2015	12 mo
Antenna - Biconilog	Teseq	CBL 6141B	AYL	7/30/2015	24 mo
Amplifier - Pre-Amplifier	Miteq	AM-1616-1000	PAB	7/31/2015	12 mo
Filter - Low Pass	Micro-Tronics	LPM50004	LFF	1/21/2016	12 mo
Cable	Northwest EMC	Bilog Cables	NC1	8/27/2015	12 mo
Antenna - Double Ridge	EMCO	3115	AHM	6/3/2014	24 mo
Amplifier - Pre-Amplifier	Miteq	AMF-3D-00100800-32-13P	AVZ	7/31/2015	12 mo
Filter - Band Pass/Notch	Micro-Tronics	BRC50705	HHM	1/21/2016	12 mo
Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12 mo
Cable	Northwest EMC	3115 Horn Cable	NC2	6/17/2015	12 mo
Antenna - Standard Gain	EMCO	3160-08	AHO	NCR	0 mo
Antenna - Standard Gain	EMCO	3160-07	AHP	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-12001800-30-10P	AOJ	9/21/2015	12 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-08001200-30-10P	AOK	9/21/2015	12 mo
Cable	Northwest EMC	Standard Gain Horn Cable	NC3	6/17/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-09	AIY	NCR	0 mo
Amplifier - Pre-Amplifier	Miteq	AMF-6F-18002650-25-10P	AOD	6/6/2015	12 mo
Cable	Northwest EMC	N/A	NC8	6/6/2015	12 mo
Antenna - Standard Gain	ETS Lindgren	3160-10	AJE	NCR	0 mo
Amplifier	Miteq	JSW45-2600400-40-5P	TTK	11/3/2015	12 mo
Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC7	11/3/2015	12 mo

MEASUREMENT BANDWIDTHS

Frequency Range (MHz)	Peak Data (kHz)	Quasi-Peak Data (kHz)	Average Data (kHz)
0.01 - 0.15	1.0	0.2	0.2
0.15 - 30.0	10.0	9.0	9.0
30.0 - 1000	100.0	120.0	120.0
Above 1000	1000.0	N/A	1000.0

TEST DESCRIPTION

The highest gain antenna of each type to be used with the EUT were tested. The EUT was configured for the lowest, a middle, and the highest transmit frequency in each operational band. For each configuration, the spectrum was scanned throughout the specified range. Measurements were made to satisfy the three requirements of 47 CFR 15.407: Field strength under 1GHz, Restricted Bands of 47 CFR 15.205, and EIRP of 47 CFR 15.407.

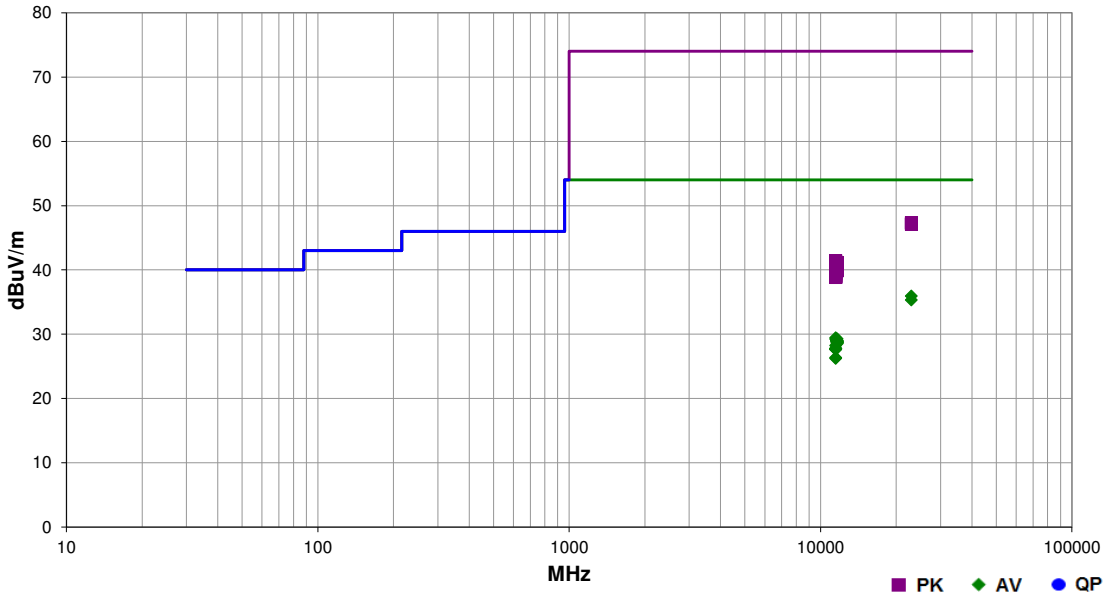
While scanning, emissions from the EUT were maximized by rotating the EUT on a turntable, adjusting the position of the EUT and EUT antenna in three orthogonal axis, and adjusting the measurement antenna height and polarization (per ANSI C63.10:2009). A preamp and high pass filter (and notch filter) were used for this test in order to provide sufficient measurement sensitivity.

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1748	**Date:**	04/14/16		
Project:	None	**Temperature:**	24 °C		
Job Site:	NC01	**Humidity:**	31% RH		
Serial Number:	041152140753	**Barometric Pres.:**	1008 mbar	**Tested by:**	Richard Mellroth
EUT:	Model 1631				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a/n/ac), Signal setting at > 95% Duty Cycle. See comments next to data points for EUT Channel, Data Rate, Antenna Chain, and orientation.				
Deviations:	None				
Comments:	Testing 20MHz BW Channels, restricted band measurements. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels.				

Test Specifications	**Test Method**
FCC 15.407:2016	ANSI C63.10:2013

Run #	12,14,15,19	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
22979.780	38.8	-2.9	1.2	275.0	3.0	0.0	Horz	AV	0.0	35.9	54.0	-18.1	Ch 149, 6Mbps, Ant A, EUT Normal
22979.290	38.2	-2.9	1.2	104.0	3.0	0.0	Vert	AV	0.0	35.3	54.0	-18.7	Ch 149, 6Mbps, Ant A, EUT Normal
11489.440	31.5	-2.1	1.9	347.0	3.0	0.0	Horz	AV	0.0	29.4	54.0	-24.6	Ch 149, 6Mbps, Ant A, EUT Normal
11649.930	31.2	-1.9	4.0	135.0	3.0	0.0	Vert	AV	0.0	29.3	54.0	-24.7	Ch 165, 6Mbps, Ant A, EUT Normal
11490.060	31.3	-2.1	1.6	180.0	3.0	0.0	Vert	AV	0.0	29.2	54.0	-24.8	Ch 149, 6Mbps, Ant A, EUT Normal
11569.860	31.0	-2.0	1.6	160.0	3.0	0.0	Vert	AV	0.0	29.0	54.0	-25.0	Ch 157, 6Mbps, Ant A, EUT Normal
11569.030	31.0	-2.0	1.6	195.0	3.0	0.0	Horz	AV	0.0	29.0	54.0	-25.0	Ch 157, 6Mbps, Ant A, EUT Normal
11649.980	30.9	-1.9	1.6	0.0	3.0	0.0	Vert	AV	0.0	29.0	54.0	-25.0	Ch 165, 6Mbps, Ant A, EUT Vertical
11649.030	30.9	-1.9	1.6	288.0	3.0	0.0	Horz	AV	0.0	29.0	54.0	-25.0	Ch 165, 6Mbps, Ant A, EUT Normal
11650.310	30.9	-1.9	2.9	119.0	3.0	0.0	Vert	AV	0.0	29.0	54.0	-25.0	Ch 165, MCS8(n), Ant AB, EUT Normal
11649.120	30.8	-1.9	1.6	311.0	3.0	0.0	Horz	AV	0.0	28.9	54.0	-25.1	Ch 165, 6Mbps, Ant B, EUT Normal
11650.320	30.8	-1.9	1.6	273.0	3.0	0.0	Vert	AV	0.0	28.9	54.0	-25.1	Ch 165, 6Mbps, Ant B, EUT Normal
11649.720	30.7	-1.9	1.6	223.0	3.0	0.0	Horz	AV	0.0	28.8	54.0	-25.2	Ch 165, 6Mbps, Ant A, EUT Vertical
11649.590	30.7	-1.9	1.6	150.0	3.0	0.0	Horz	AV	0.0	28.8	54.0	-25.2	Ch 165, MCS8(n), Ant AB, EUT Normal
11651.150	30.7	-1.9	1.6	357.0	3.0	0.0	Horz	AV	0.0	28.8	54.0	-25.2	Ch 165, MCS0(ac), Ant AB, EUT Normal
11649.480	30.6	-1.9	1.6	278.0	3.0	0.0	Vert	AV	0.0	28.7	54.0	-25.3	Ch 165, MCS0(ac), Ant AB, EUT Normal
11649.230	30.6	-1.9	1.6	94.0	3.0	0.0	Vert	AV	0.0	28.7	54.0	-25.3	Ch 165, 6Mbps, Ant A, EUT Flat
11651.140	30.5	-1.9	1.6	6.0	3.0	0.0	Horz	AV	0.0	28.6	54.0	-25.4	Ch 165, 6Mbps, Ant A, EUT Flat
11491.270	30.3	-2.1	3.9	197.0	3.0	0.0	Horz	AV	0.0	28.2	54.0	-25.8	Ch 149, MCS0(n), Ant A, EUT Normal
11491.190	29.8	-2.1	1.6	266.0	3.0	0.0	Horz	AV	0.0	27.7	54.0	-26.3	Ch 149, MCS8(n), Ant AB, EUT Normal
11491.130	29.8	-2.1	1.6	216.0	3.0	0.0	Horz	AV	0.0	27.7	54.0	-26.3	Ch 149, MCS0(n), Ant B, EUT Normal
11490.820	29.8	-2.1	1.6	50.0	3.0	0.0	Horz	AV	0.0	27.7	54.0	-26.3	Ch 149, MCS8(ac), Ant AB, EUT Normal
11490.310	29.8	-2.1	1.6	207.0	3.0	0.0	Horz	AV	0.0	27.7	54.0	-26.3	Ch 149, MCS7(n), Ant A, EUT Normal
11489.930	29.8	-2.1	1.6	13.0	3.0	0.0	Horz	AV	0.0	27.7	54.0	-26.3	Ch 149, MCS8(ac), Ant A, EUT Normal
11489.860	29.8	-2.1	1.6	350.0	3.0	0.0	Horz	AV	0.0	27.7	54.0	-26.3	Ch 149, MCS15(n), Ant AB, EUT Normal
11490.890	29.7	-2.1	1.6	203.0	3.0	0.0	Horz	AV	0.0	27.6	54.0	-26.4	Ch 149, MCS0(ac), Ant AB, EUT Normal
11490.390	29.7	-2.1	1.6	113.0	3.0	0.0	Horz	AV	0.0	27.6	54.0	-26.4	Ch 149, MCS0(ac), Ant A, EUT Normal
22980.420	50.2	-2.9	1.2	275.0	3.0	0.0	Horz	PK	0.0	47.3	74.0	-26.7	Ch 149, 6Mbps, Ant A, EUT Normal

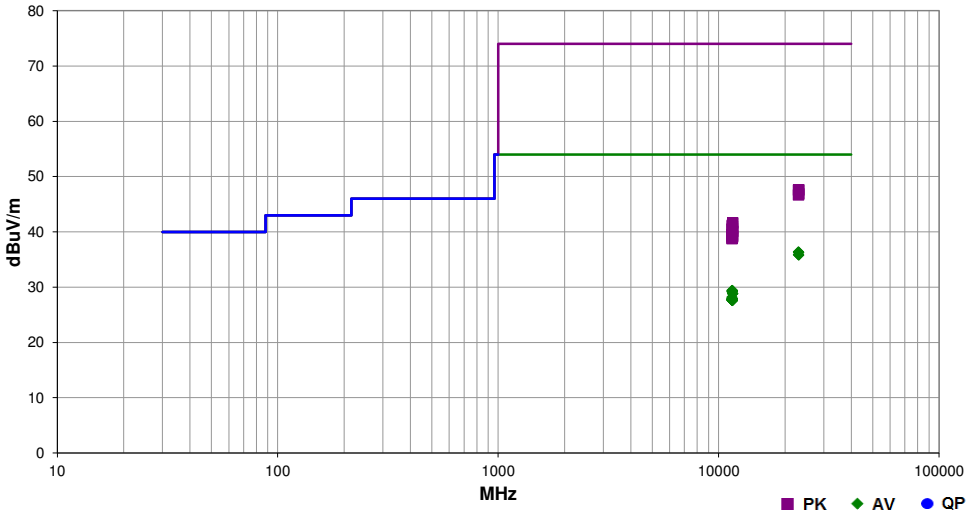
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
22978.880	50.0	-2.9	1.2	104.0	3.0	0.0	Vert	PK	0.0	47.1	74.0	-26.9	Ch 149, 6Mbps, Ant A, EUT Normal
11489.970	28.4	-2.1	1.7	360.0	3.0	0.0	Horz	AV	0.0	26.3	54.0	-27.7	Ch 149, 36Mbps, Ant A, EUT Normal
11489.920	28.3	-2.1	1.6	340.0	3.0	0.0	Horz	AV	0.0	26.2	54.0	-27.8	Ch 149, 54Mbps, Ant A, EUT Normal
11489.460	43.5	-2.1	1.9	347.0	3.0	0.0	Horz	PK	0.0	41.4	74.0	-32.6	Ch 149, 6Mbps, Ant A, EUT Normal
11649.440	43.1	-1.9	1.6	311.0	3.0	0.0	Horz	PK	0.0	41.2	74.0	-32.8	Ch 165, 6Mbps, Ant B, EUT Normal
11650.310	43.0	-1.9	4.0	135.0	3.0	0.0	Vert	PK	0.0	41.1	74.0	-32.9	Ch 165, 6Mbps, Ant A, EUT Normal
11650.620	42.8	-1.9	1.6	0.0	3.0	0.0	Vert	PK	0.0	40.9	74.0	-33.1	Ch 165, 6Mbps, Ant A, EUT Vertical
11649.990	42.7	-1.9	1.6	357.0	3.0	0.0	Horz	PK	0.0	40.8	74.0	-33.2	Ch 165, MCS0(ac), Ant AB, EUT Normal
11650.350	42.6	-1.9	2.9	119.0	3.0	0.0	Vert	PK	0.0	40.7	74.0	-33.3	Ch 165, MCS8(n), Ant AB, EUT Normal
11568.640	42.6	-2.0	1.6	195.0	3.0	0.0	Horz	PK	0.0	40.6	74.0	-33.4	Ch 157, 6Mbps, Ant A, EUT Normal
11650.930	42.5	-1.9	1.6	273.0	3.0	0.0	Vert	PK	0.0	40.6	74.0	-33.4	Ch 165, 6Mbps, Ant B, EUT Normal
11490.980	42.6	-2.1	1.6	180.0	3.0	0.0	Vert	PK	0.0	40.5	74.0	-33.5	Ch 149, 6Mbps, Ant A, EUT Normal
11568.920	42.4	-2.0	1.6	160.0	3.0	0.0	Vert	PK	0.0	40.4	74.0	-33.6	Ch 157, 6Mbps, Ant A, EUT Normal
11489.840	42.4	-2.1	1.6	203.0	3.0	0.0	Horz	PK	0.0	40.3	74.0	-33.7	Ch 149, MCS0(ac), Ant AB, EUT Normal
11648.910	42.2	-1.9	1.6	288.0	3.0	0.0	Horz	PK	0.0	40.3	74.0	-33.7	Ch 165, 6Mbps, Ant A, EUT Normal
11648.570	42.1	-1.9	1.6	94.0	3.0	0.0	Vert	PK	0.0	40.2	74.0	-33.8	Ch 165, 6Mbps, Ant A, EUT Flat
11650.400	42.0	-1.9	1.6	223.0	3.0	0.0	Horz	PK	0.0	40.1	74.0	-33.9	Ch 165, 6Mbps, Ant A, EUT Vertical
11650.660	42.0	-1.9	1.6	150.0	3.0	0.0	Horz	PK	0.0	40.1	74.0	-33.9	Ch 165, MCS8(n), Ant AB, EUT Normal
11649.500	41.9	-1.9	1.6	278.0	3.0	0.0	Vert	PK	0.0	40.0	74.0	-34.0	Ch 165, MCS0(ac), Ant AB, EUT Normal
11490.260	42.0	-2.1	3.9	197.0	3.0	0.0	Horz	PK	0.0	39.9	74.0	-34.1	Ch 149, MCS0(n), Ant A, EUT Normal
11650.840	41.8	-1.9	1.6	6.0	3.0	0.0	Horz	PK	0.0	39.9	74.0	-34.1	Ch 165, 6Mbps, Ant A, EUT Flat
11491.020	41.8	-2.1	1.6	50.0	3.0	0.0	Horz	PK	0.0	39.7	74.0	-34.3	Ch 149, MCS8(ac), Ant AB, EUT Normal
11488.760	41.6	-2.1	1.6	207.0	3.0	0.0	Horz	PK	0.0	39.5	74.0	-34.5	Ch 149, MCS7(n), Ant A, EUT Normal
11491.030	41.5	-2.1	1.6	340.0	3.0	0.0	Horz	PK	0.0	39.4	74.0	-34.6	Ch 149, 54Mbps, Ant A, EUT Normal
11489.010	41.4	-2.1	1.6	216.0	3.0	0.0	Horz	PK	0.0	39.3	74.0	-34.7	Ch 149, MCS0(n), Ant B, EUT Normal
11489.720	41.1	-2.1	1.6	13.0	3.0	0.0	Horz	PK	0.0	39.0	74.0	-35.0	Ch 149, MCS8(ac), Ant A, EUT Normal
11489.670	41.1	-2.1	1.6	350.0	3.0	0.0	Horz	PK	0.0	39.0	74.0	-35.0	Ch 149, MCS15(n), Ant AB, EUT Normal
11491.300	41.0	-2.1	1.6	113.0	3.0	0.0	Horz	PK	0.0	38.9	74.0	-35.1	Ch 149, MCS0(ac), Ant A, EUT Normal
11490.170	40.9	-2.1	1.7	360.0	3.0	0.0	Horz	PK	0.0	38.8	74.0	-35.2	Ch 149, 36Mbps, Ant A, EUT Normal
11489.510	40.9	-2.1	1.6	266.0	3.0	0.0	Horz	PK	0.0	38.8	74.0	-35.2	Ch 149, MCS8(n), Ant AB, EUT Normal

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1748	**Date:**	04/14/16	
Project:	None	**Temperature:**	24 °C	
Job Site:	NC01	**Humidity:**	31% RH	
Serial Number:	041152140753	**Barometric Pres.:**	1008 mbar	**Tested by:** Richard Mellroth
EUT:	Model 1631			
Configuration:	2			
Customer:	Microsoft Corporation			
Attendees:	None			
EUT Power:	110VAC/60Hz			
Operating Mode:	Transmitting 802.11(a/n/ac), Signal setting at > 95% Duty Cycle. See comments next to data points for EUT Channel, Data Rate, Antenna Chain, and orientation.			
Deviations:	None			
Comments:	Testing 40MHz and 80MHz BW Channels, restricted band measurements. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels.			

Test Specifications	Test Method
FCC 15.407:2016	ANSI C63.10:2013

Run #	16,21	Test Distance (m)	3	Antenna Height(s)	1 to 4(m)	Results	Pass



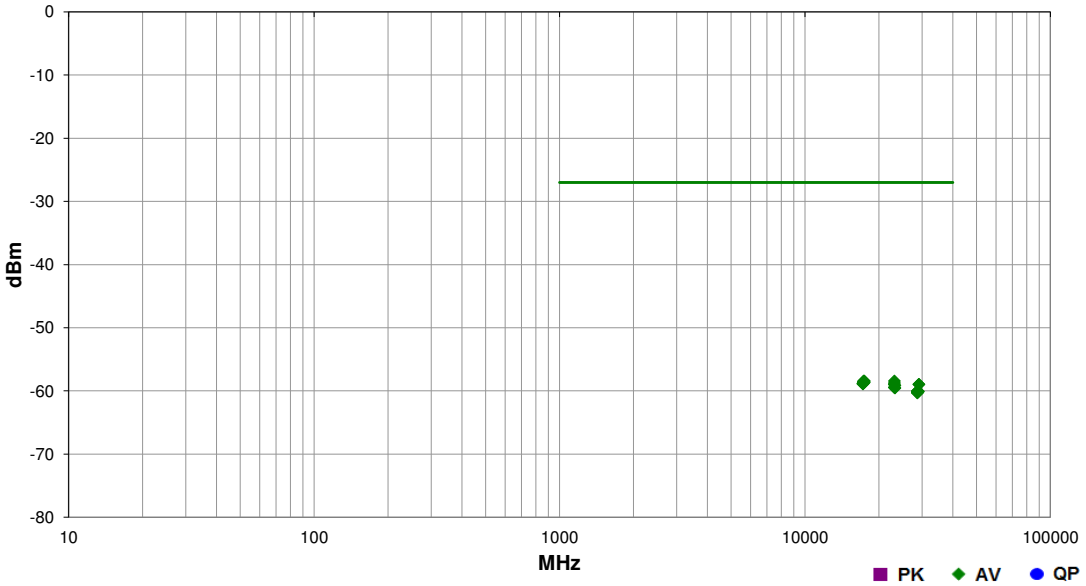
Freq (MHz)	Amplitude (dBuV)	Factor (dB)	Antenna Height (meters)	Azimuth (degrees)	Test Distance (meters)	External Attenuation (dB)	Polarity/ Transducer Type	Detector	Distance Adjustment (dB)	Adjusted (dBuV/m)	Spec. Limit (dBuV/m)	Compared to Spec. (dB)	Comments
23019.800	39.2	-2.8	1.2	55.0	3.0	0.0	Horz	AV	0.0	36.4	54.0	-17.6	Ch 149/153, MCS8(n), Ant AB, EUT Normal
23099.880	39.1	-2.8	1.2	8.0	3.0	0.0	Horz	AV	0.0	36.3	54.0	-17.7	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
23019.940	38.7	-2.8	1.2	231.0	3.0	0.0	Vert	AV	0.0	35.9	54.0	-18.1	Ch 149/153, MCS8(n), Ant AB, EUT Normal
23099.690	38.6	-2.8	1.2	244.0	3.0	0.0	Vert	AV	0.0	35.8	54.0	-18.2	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
11550.310	31.4	-2.0	2.6	181.0	3.0	0.0	Vert	AV	0.0	29.4	54.0	-24.6	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
11510.080	31.4	-2.0	1.6	350.0	3.0	0.0	Vert	AV	0.0	29.4	54.0	-24.6	Ch 149/153, MCS8(n), Ant AB, EUT Normal
11550.050	31.2	-2.0	2.3	295.0	3.0	0.0	Horz	AV	0.0	29.2	54.0	-24.8	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
11509.120	31.2	-2.0	1.6	205.0	3.0	0.0	Horz	AV	0.0	29.2	54.0	-24.8	Ch 149/153, MCS8(n), Ant AB, EUT Normal
11590.300	30.8	-2.0	1.6	127.0	3.0	0.0	Horz	AV	0.0	28.8	54.0	-25.2	Ch 157/161, MCS8(n), Ant AB, EUT Normal
11590.290	30.8	-2.0	1.6	264.0	3.0	0.0	Vert	AV	0.0	28.8	54.0	-25.2	Ch 157/161, MCS8(n), Ant AB, EUT Normal
11508.810	30.2	-2.0	4.0	273.0	3.0	0.0	Vert	AV	0.0	28.2	54.0	-25.8	Ch 149/153, MCS15(n), Ant AB, EUT Normal
11549.880	29.9	-2.0	2.1	267.0	3.0	0.0	Vert	AV	0.0	27.9	54.0	-26.1	Ch 149/161, MCS9(ac), Ant A, EUT Normal
11510.360	29.9	-2.0	1.0	286.0	3.0	0.0	Vert	AV	0.0	27.9	54.0	-26.1	Ch 149/153, MCS9(ac), Ant AB, EUT Normal
11509.710	29.9	-2.0	1.6	8.0	3.0	0.0	Vert	AV	0.0	27.9	54.0	-26.1	Ch 149/153, MCS0(ac), Ant A, EUT Normal
11508.750	29.8	-2.0	1.6	233.0	3.0	0.0	Vert	AV	0.0	27.8	54.0	-26.2	Ch 149/153, MCS0(ac), Ant AB, EUT Normal
11509.990	29.7	-2.0	1.6	11.0	3.0	0.0	Vert	AV	0.0	27.7	54.0	-26.3	Ch 149/153, MCS7(n), Ant A, EUT Normal
11508.840	29.7	-2.0	1.6	100.0	3.0	0.0	Vert	AV	0.0	27.7	54.0	-26.3	Ch 149/153, MCS0(n), Ant A, EUT Normal
11509.530	29.7	-2.0	1.6	201.0	3.0	0.0	Vert	AV	0.0	27.7	54.0	-26.3	Ch 149/153, MCS9(ac), Ant A, EUT Normal
11511.150	29.7	-2.0	1.6	143.0	3.0	0.0	Vert	AV	0.0	27.7	54.0	-26.3	Ch 149/153, MCS0(ac), Ant B, EUT Normal
11552.280	29.6	-2.0	1.6	276.0	3.0	0.0	Vert	AV	0.0	27.6	54.0	-26.4	Ch 149/161, MCS9(ac), Ant AB, EUT Normal
11549.680	29.6	-2.0	1.6	304.0	3.0	0.0	Vert	AV	0.0	27.6	54.0	-26.4	Ch 149/161, MCS0(ac), Ant A, EUT Normal
11547.900	29.6	-2.0	1.6	79.0	3.0	0.0	Vert	AV	0.0	27.6	54.0	-26.4	Ch 149/161, MCS9(ac), Ant B, EUT Normal
23099.310	50.4	-2.8	1.2	8.0	3.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
23019.180	50.4	-2.8	1.2	55.0	3.0	0.0	Horz	PK	0.0	47.6	74.0	-26.4	Ch 149/153, MCS8(n), Ant AB, EUT Normal
23100.110	49.7	-2.8	1.2	244.0	3.0	0.0	Vert	PK	0.0	46.9	74.0	-27.1	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
23019.720	49.5	-2.8	1.2	231.0	3.0	0.0	Vert	PK	0.0	46.7	74.0	-27.3	Ch 149/153, MCS8(n), Ant AB, EUT Normal
11590.180	43.6	-2.0	1.6	264.0	3.0	0.0	Vert	PK	0.0	41.6	74.0	-32.4	Ch 157/161, MCS8(n), Ant AB, EUT Normal
11511.410	43.2	-2.0	1.6	350.0	3.0	0.0	Vert	PK	0.0	41.2	74.0	-32.8	Ch 149/153, MCS8(n), Ant AB, EUT Normal
11548.760	43.0	-2.0	2.3	295.0	3.0	0.0	Horz	PK	0.0	41.0	74.0	-33.0	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
11549.790	42.6	-2.0	2.6	181.0	3.0	0.0	Vert	PK	0.0	40.6	74.0	-33.4	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
11509.490	42.5	-2.0	1.6	205.0	3.0	0.0	Horz	PK	0.0	40.5	74.0	-33.5	Ch 149/153, MCS8(n), Ant AB, EUT Normal
11588.830	42.1	-2.0	1.6	127.0	3.0	0.0	Horz	PK	0.0	40.1	74.0	-33.9	Ch 157/161, MCS8(n), Ant AB, EUT Normal
11548.500	41.5	-2.0	1.6	276.0	3.0	0.0	Vert	PK	0.0	39.5	74.0	-34.5	Ch 149/161, MCS9(ac), Ant AB, EUT Normal
11509.150	41.5	-2.0	4.0	273.0	3.0	0.0	Vert	PK	0.0	39.5	74.0	-34.5	Ch 149/153, MCS15(n), Ant AB, EUT Normal
11510.800	41.4	-2.0	1.6	143.0	3.0	0.0	Vert	PK	0.0	39.4	74.0	-34.6	Ch 149/153, MCS0(ac), Ant B, EUT Normal
11509.500	41.4	-2.0	1.0	286.0	3.0	0.0	Vert	PK	0.0	39.4	74.0	-34.6	Ch 149/153, MCS9(ac), Ant AB, EUT Normal
11510.520	41.4	-2.0	1.6	201.0	3.0	0.0	Vert	PK	0.0	39.4	74.0	-34.6	Ch 149/153, MCS9(ac), Ant A, EUT Normal
11551.460	41.3	-2.0	1.6	304.0	3.0	0.0	Vert	PK	0.0	39.3	74.0	-34.7	Ch 149/161, MCS0(ac), Ant A, EUT Normal
11510.580	41.3	-2.0	1.6	11.0	3.0	0.0	Vert	PK	0.0	39.3	74.0	-34.7	Ch 149/153, MCS7(n), Ant A, EUT Normal
11509.280	41.3	-2.0	1.6	8.0	3.0	0.0	Vert	PK	0.0	39.3	74.0	-34.7	Ch 149/153, MCS0(ac), Ant A, EUT Normal
11551.070	41.1	-2.0	1.6	79.0	3.0	0.0	Vert	PK	0.0	39.1	74.0	-34.9	Ch 149/161, MCS9(ac), Ant B, EUT Normal
11549.010	41.1	-2.0	2.1	267.0	3.0	0.0	Vert	PK	0.0	39.1	74.0	-34.9	Ch 149/161, MCS9(ac), Ant A, EUT Normal
11509.450	40.9	-2.0	1.6	233.0	3.0	0.0	Vert	PK	0.0	38.9	74.0	-35.1	Ch 149/153, MCS0(ac), Ant AB, EUT Normal
11509.730	40.8	-2.0	1.6	100.0	3.0	0.0	Vert	PK	0.0	38.8	74.0	-35.2	Ch 149/153, MCS0(n), Ant A, EUT Normal

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1748	**Date:**	04/14/16		
Project:	None	**Temperature:**	24 °C		
Job Site:	NC01	**Humidity:**	31% RH		
Serial Number:	041152140753	**Barometric Pres.:**	1008 mbar	**Tested by:**	Richard Mellroth
EUT:	Model 1631				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a/n/ac), Signal setting at > 95% Duty Cycle. See comments next to data points for EUT Channel, Data Rate, Antenna Chain, and orientation.				
Deviations:	None				
Comments:	EIRP measurements. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels.				

Test Specifications	**Test Method**
FCC 15.407:2016	ANSI C63.10:2013

Run #	13,20,24	**Test Distance (m)**	3	**Antenna Height(s)**	1 to 4(m)	**Results**	Pass



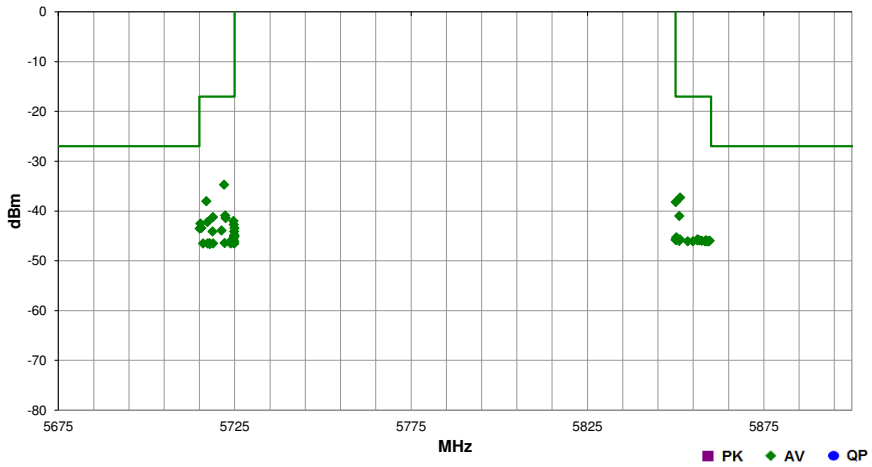
	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	17355.760	1.6	43.0	Vert	AV	1.43E-09	-58.4	-27.0	-31.4	Ch 157, 6Mbps, Ant A, EUT Normal
	23179.840	1.2	69.0	Vert	AV	1.43E-09	-58.4	-27.0	-31.4	Ch 157/161, MCS8(n), Ant AB, EUT Normal
	17474.230	1.6	133.0	Vert	AV	1.43E-09	-58.5	-27.0	-31.5	Ch 165, 6Mbps, Ant A, EUT Normal
	17383.500	1.6	112.0	Vert	AV	1.41E-09	-58.5	-27.0	-31.5	Ch 157/161, MCS8(n), Ant AB, EUT Normal
	17356.240	1.6	119.0	Horz	AV	1.40E-09	-58.5	-27.0	-31.5	Ch 157, 6Mbps, Ant A, EUT Normal
	17385.390	3.6	68.0	Horz	AV	1.37E-09	-58.6	-27.0	-31.6	Ch 157/161, MCS8(n), Ant AB, EUT Normal
	17473.800	1.6	283.0	Horz	AV	1.36E-09	-58.7	-27.0	-31.7	Ch 165, 6Mbps, Ant A, EUT Normal
	17326.330	1.6	191.0	Vert	AV	1.36E-09	-58.7	-27.0	-31.7	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
	17323.710	1.1	287.0	Horz	AV	1.35E-09	-58.7	-27.0	-31.7	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
	23180.050	1.2	210.0	Horz	AV	1.33E-09	-58.7	-27.0	-31.7	Ch 157/161, MCS8(n), Ant AB, EUT Normal
	17233.590	1.6	53.0	Vert	AV	1.31E-09	-58.8	-27.0	-31.8	Ch 149, 6Mbps, Ant A, EUT Normal
	17265.560	1.6	335.0	Vert	AV	1.31E-09	-58.8	-27.0	-31.8	Ch 149/153, MCS8(n), Ant AB, EUT Normal
	17264.320	2.8	227.0	Horz	AV	1.31E-09	-58.8	-27.0	-31.8	Ch 149/153, MCS8(n), Ant AB, EUT Normal
	17233.640	1.6	0.0	Horz	AV	1.28E-09	-58.9	-27.0	-31.9	Ch 149, 6Mbps, Ant A, EUT Normal
	23140.000	1.2	229.0	Vert	AV	1.27E-09	-58.9	-27.0	-31.9	Ch 157, 6Mbps, Ant A, EUT Normal
	29126.450	1.2	314.0	Vert	AV	1.27E-09	-59.0	-27.0	-32.0	Ch 165, 6Mbps, Ant A, EUT Normal
	29124.810	1.2	312.0	Horz	AV	1.27E-09	-59.0	-27.0	-32.0	Ch 165, 6Mbps, Ant A, EUT Normal
	23299.430	1.2	278.0	Vert	AV	1.22E-09	-59.1	-27.0	-32.1	Ch 165, 6Mbps, Ant A, EUT Normal
	23140.960	1.2	177.0	Horz	AV	1.14E-09	-59.4	-27.0	-32.4	Ch 157, 6Mbps, Ant A, EUT Normal
	23299.700	1.2	337.0	Horz	AV	1.11E-09	-59.5	-27.0	-32.5	Ch 165, 6Mbps, Ant A, EUT Normal
	28776.500	1.2	302.0	Vert	AV	9.94E-10	-60.0	-27.0	-33.0	Ch 149/153, MCS8(n), Ant AB, EUT Normal
	28776.330	1.2	269.0	Horz	AV	9.94E-10	-60.0	-27.0	-33.0	Ch 149/153, MCS8(n), Ant AB, EUT Normal
	28973.620	1.2	239.0	Horz	AV	9.88E-10	-60.1	-27.0	-33.1	Ch 157/161, MCS8(n), Ant AB, EUT Normal
	28923.450	1.2	125.0	Vert	AV	9.83E-10	-60.1	-27.0	-33.1	Ch 157, 6Mbps, Ant A, EUT Normal
	28922.690	1.2	9.0	Horz	AV	9.83E-10	-60.1	-27.0	-33.1	Ch 157, 6Mbps, Ant A, EUT Normal
	28973.550	1.2	0.0	Vert	AV	9.66E-10	-60.2	-27.0	-33.2	Ch 157/161, MCS8(n), Ant AB, EUT Normal
	28873.510	1.2	269.0	Horz	AV	9.57E-10	-60.2	-27.0	-33.2	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
	28873.500	1.2	321.0	Vert	AV	9.57E-10	-60.2	-27.0	-33.2	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
	28726.500	1.2	3.0	Vert	AV	9.51E-10	-60.2	-27.0	-33.2	Ch 149, 6Mbps, Ant A, EUT Normal
	28726.370	1.2	141.0	Horz	AV	9.29E-10	-60.3	-27.0	-33.3	Ch 149, 6Mbps, Ant A, EUT Normal

SPURIOUS RADIATED EMISSIONS

Work Order:	MCSO1748	**Date:**	04/15/16		
Project:	None	**Temperature:**	23 °C		
Job Site:	NC01	**Humidity:**	36% RH		
Serial Number:	041152140753	**Barometric Pres.:**	1026 mbar	**Tested by:**	Richard Mellroth
EUT:	Model 1631				
Configuration:	2				
Customer:	Microsoft Corporation				
Attendees:	None				
EUT Power:	110VAC/60Hz				
Operating Mode:	Transmitting 802.11(a/n/ac), Signal setting at > 95% Duty Cycle. See comments next to data points for EUT Channel, Data Rate, Antenna Chain, and orientation.				
Deviations:	None				
Comments:	Band Edge measurements. Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels.				

Test Specifications	Test Method
FCC 15.407:2016	ANSI C63.10:2013

Run #	25	Test Distance (m)	1	Antenna Height(s)	1(m)	Results	Pass



	Freq (MHz)	Antenna Height (meters)	Azimuth (degrees)	Polarity/ Transducer Type	Detector	EIRP (Watts)	EIRP (dBm)	Spec. Limit (dBm)	Compared to Spec. (dB)	Comments
	5721.983	1.0	312.0	Vert	AV	3.37E-07	-34.7	-17.0	-17.7	Ch 149/161, MCS0(ac), Ant B, EUT Vertical
	5851.300	1.0	310.0	Vert	AV	1.86E-07	-37.3	-17.0	-20.3	Ch 149/161, MCS0(ac), Ant AB, EUT Vertical
	5716.967	1.0	339.0	Vert	AV	1.58E-07	-38.0	-17.0	-21.0	Ch 149/161, MCS0(ac), Ant AB, EUT Vertical
	5850.033	1.0	325.0	Vert	AV	1.51E-07	-38.2	-17.0	-21.2	Ch 149/161, MCS9(ac), Ant AB, EUT Vertical
	5722.317	1.0	293.0	Vert	AV	8.08E-08	-40.9	-17.0	-23.9	Ch 149/153, MCS8(n), Ant AB, EUT Vertical
	5851.033	1.0	319.0	Vert	AV	7.94E-08	-41.0	-17.0	-24.0	Ch 149/161, MCS0(ac), Ant B, EUT Vertical
	5718.833	1.0	288.0	Vert	AV	7.54E-08	-41.2	-17.0	-24.2	Ch 149/161, MCS9(ac), Ant AB, EUT Vertical
	5722.450	1.0	340.0	Vert	AV	7.20E-08	-41.4	-17.0	-24.4	Ch 149/153, MCS15(n), Ant AB, EUT Vertical
	5724.650	1.0	321.0	Vert	AV	6.27E-08	-42.0	-17.0	-25.0	Ch 149/153, MCS0(ac), Ant AB, EUT Vertical
	5717.300	1.0	191.0	Vert	AV	5.99E-08	-42.2	-17.0	-25.2	Ch 149/161, MCS0(ac), Ant AB, EUT Flat
	5715.300	1.0	0.0	Horz	AV	5.59E-08	-42.5	-17.0	-25.5	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
	5724.750	1.0	195.0	Horz	AV	5.34E-08	-42.7	-17.0	-25.7	Ch 149/161, MCS0(ac), Ant AB, EUT Flat
	5715.567	1.0	339.0	Vert	AV	4.55E-08	-43.4	-17.0	-26.4	Ch 149/161, MCS0(ac), Ant A, EUT Vertical
	5724.933	1.0	310.0	Vert	AV	4.54E-08	-43.4	-17.0	-26.4	Ch 149, MCS8(n), Ant AB, EUT Vertical
	5715.100	1.0	341.0	Vert	AV	4.44E-08	-43.5	-17.0	-26.5	Ch 149/161, MCS0(ac), Ant AB, EUT Normal
	5721.283	1.0	323.0	Vert	AV	4.05E-08	-43.9	-17.0	-26.9	Ch 149, MCS15(n), Ant AB, EUT Vertical
	5718.700	1.0	330.0	Horz	AV	3.87E-08	-44.1	-17.0	-27.1	Ch 149/161, MCS0(ac), Ant AB, EUT Vertical
	5724.883	1.0	333.0	Vert	AV	3.87E-08	-44.1	-17.0	-27.1	Ch 149, MCS0(ac), Ant AB, EUT Vertical
	5724.917	1.0	313.0	Vert	AV	3.29E-08	-44.8	-17.0	-27.8	Ch 149, MCS0(ac), Ant B, EUT Vertical
	5724.900	1.0	322.0	Vert	AV	3.14E-08	-45.0	-17.0	-28.0	Ch 149, MCS0(n), Ant B, EUT Vertical
	5724.883	1.0	352.0	Vert	AV	3.14E-08	-45.0	-17.0	-28.0	Ch 149, MCS7(n), Ant B, EUT Vertical
	5724.900	1.0	23.0	Vert	AV	3.07E-08	-45.1	-17.0	-28.1	Ch 149, 54Mbps, Ant B, EUT Vertical
	5724.833	1.0	281.0	Vert	AV	3.00E-08	-45.2	-17.0	-28.2	Ch 149, 6Mbps, Ant B, EUT Vertical
	5850.200	1.0	299.0	Vert	AV	2.95E-08	-45.3	-17.0	-28.3	Ch 165, MCS8(n), Ant AB, EUT Vertical
	5850.233	1.0	335.0	Vert	AV	2.88E-08	-45.4	-17.0	-28.4	Ch 165, MCS0(ac), Ant AB, EUT Vertical
	5724.633	1.0	278.0	Vert	AV	2.80E-08	-45.5	-17.0	-28.5	Ch 149, 6Mbps, Ant A, EUT Vertical
	5856.217	1.0	350.0	Vert	AV	2.69E-08	-45.7	-17.0	-28.7	Ch 157/161, MCS0(ac), Ant AB, EUT Vertical
	5851.233	1.0	306.0	Vert	AV	2.69E-08	-45.7	-17.0	-28.7	Ch 165, MCS0(ac), Ant B, EUT Vertical
	5850.283	1.0	0.0	Vert	AV	2.63E-08	-45.8	-17.0	-28.8	Ch 157/161, MCS8(n), Ant AB, EUT Vertical
	5850.100	1.0	306.0	Vert	AV	2.63E-08	-45.8	-17.0	-28.8	Ch 165, 54Mbps, Ant B, EUT Vertical
	5850.017	1.0	329.0	Vert	AV	2.63E-08	-45.8	-17.0	-28.8	Ch 165, MCS0(n), Ant B, EUT Vertical
	5724.233	1.0	353.0	Vert	AV	2.61E-08	-45.8	-17.0	-28.8	Ch 149, MCS8(ac), Ant B, EUT Vertical
	5724.633	1.0	18.0	Vert	AV	2.61E-08	-45.8	-17.0	-28.8	Ch 149, 36Mbps, Ant B, EUT Vertical
	5858.583	1.0	271.0	Vert	AV	2.57E-08	-45.9	-17.0	-28.9	Ch 157/161, MCS0(ac), Ant B, EUT Vertical
	5856.750	1.0	296.0	Vert	AV	2.57E-08	-45.9	-17.0	-28.9	Ch 157/161, MCS0(n), Ant B, EUT Vertical
	5856.200	1.0	304.0	Vert	AV	2.57E-08	-45.9	-17.0	-28.9	Ch 157/161, MCS9(ac), Ant B, EUT Vertical
	5859.683	1.0	0.0	Vert	AV	2.52E-08	-46.0	-17.0	-29.0	Ch 149/153, MCS7(n), Ant B, EUT Vertical
	5857.417	1.0	16.0	Vert	AV	2.51E-08	-46.0	-17.0	-29.0	Ch 149/161, MCS9(ac), Ant B, EUT Vertical
	5851.017	1.0	293.0	Vert	AV	2.51E-08	-46.0	-17.0	-29.0	Ch 149/153, MCS0(n), Ant B, EUT Vertical
	5859.300	1.0	184.0	Vert	AV	2.46E-08	-46.1	-17.0	-29.1	Ch 157/161, MCS7(n), Ant B, EUT Vertical
	5858.933	1.0	166.0	Vert	AV	2.46E-08	-46.1	-17.0	-29.1	Ch 157/161, MCS0(ac), Ant A, EUT Vertical
	5858.350	1.0	297.0	Vert	AV	2.46E-08	-46.1	-17.0	-29.1	Ch 149/153, MCS9(ac), Ant B, EUT Vertical
	5854.933	1.0	301.0	Vert	AV	2.46E-08	-46.1	-17.0	-29.1	Ch 149/153, MCS0(ac), Ant B, EUT Vertical
	5853.433	1.0	46.0	Vert	AV	2.46E-08	-46.1	-17.0	-29.1	Ch 165, MCS0(ac), Ant A, EUT Vertical
	5724.883	1.0	228.0	Vert	AV	2.44E-08	-46.1	-17.0	-29.1	Ch 149, 6Mbps, Ant A, EUT Flat
	5722.150	1.0	59.0	Horz	AV	2.28E-08	-46.4	-17.0	-29.4	Ch 149, 6Mbps, Ant A, EUT Flat
	5724.683	1.0	189.0	Horz	AV	2.28E-08	-46.4	-17.0	-29.4	Ch 149, 6Mbps, Ant B, EUT Normal
	5716.033	1.0	40.0	Vert	AV	2.23E-08	-46.5	-17.0	-29.5	Ch 149, 6Mbps, Ant A, EUT Normal
	5717.333	1.0	190.0	Horz	AV	2.23E-08	-46.5	-17.0	-29.5	Ch 149, 6Mbps, Ant B, EUT Vertical
	5717.783	1.0	137.0	Horz	AV	2.23E-08	-46.5	-17.0	-29.5	Ch 149, 6Mbps, Ant A, EUT Normal
	5717.867	1.0	325.0	Horz	AV	2.23E-08	-46.5	-17.0	-29.5	Ch 149, 6Mbps, Ant B, EUT Flat
	5718.867	1.0	59.0	Horz	AV	2.23E-08	-46.5	-17.0	-29.5	Ch 149, 6Mbps, Ant A, EUT Vertical
	5723.867	1.0	157.0	Vert	AV	2.23E-08	-46.5	-17.0	-29.5	Ch 149, 6Mbps, Ant B, EUT Normal
	5724.917	1.0	287.0	Vert	AV	2.23E-08	-46.5	-17.0	-29.5	Ch 149/161, MCS9(ac), Ant B, EUT Vertical
	5717.950	1.0	264.0	Vert	AV	2.18E-08	-46.6	-17.0	-29.6	Ch 149, 6Mbps, Ant B, EUT Flat

FREQUENCY STABILITY

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Chamber - Temperature/Humidity	Tenney	T6S	TBG	NCR	0
Thermometer	Omega Engineering, Inc.	HH311	DUH	4/3/2015	36
Analyzer - Spectrum Analyzer	Agilent	E4446A	AAT	9/29/2015	12
Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKV	3/4/2016	12
Block - DC	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Generator - Signal	Agilent	N5183A	TIA	4/6/2016	24

TEST DESCRIPTION

A direct connect measurement was made between the EUT's antenna cable and a spectrum analyzer. The spectrum analyzer is equipped with a precision frequency reference that exceeds the stability requirement of the EUT.

Measurements were made at the edges of the main transmit bands as called out on the data sheets. Testing was done with an absence of modulation in a CW mode of operation.

The primary supply voltage was varied from 85 % to 115% of the nominal voltage Using a temperature chamber, the transmit frequency was recorded at the extremes of the specified temperature range and at 10°C intervals.

Where a ppm limit applies: ppm = (Measured Frequency / Measured Nominal Frequency - 1) * 1,000,000

Per the requirements of FCC 15.407:

"Manufacturers of U-NII devices are responsible for ensuring frequency stability such that an emission is maintained within the band of operation under all conditions of normal operation as specified in the user's manual."

No specific limits are provided in either FCC 15.407, the product specific rule part, or FCC 2.1055, the equipment authorization procedure for testing frequency stability. While there are no limits called out, any results less than 100ppm will still allow the radio to be operating within the band.

FREQUENCY STABILITY

NORTHWEST EMC

XMit 2015.01.14

EUT:	Model 1631			Work Order:	MCSO1748
Serial Number:	041152140753			Date:	04/13/16
Customer:	Microsoft Corporation			Temperature:	24°C
Attendees:	None			Humidity:	31%
Project:	None			Barometric Pres.:	1017 mbar
Tested by:	Richard Mellroth	Power:	110VAC/60Hz	Job Site:	NC05

TEST SPECIFICATIONS	Test Method
FCC 15.407:2016	ANSI C63.10:2013

COMMENTS

EUT operating in CW Mode. Client supplied adapter cable loss of 1.3dB included in reference level offset. Measurements made on Antenna port A. Manufacturer specified temperature range of 0° C to +40° C.

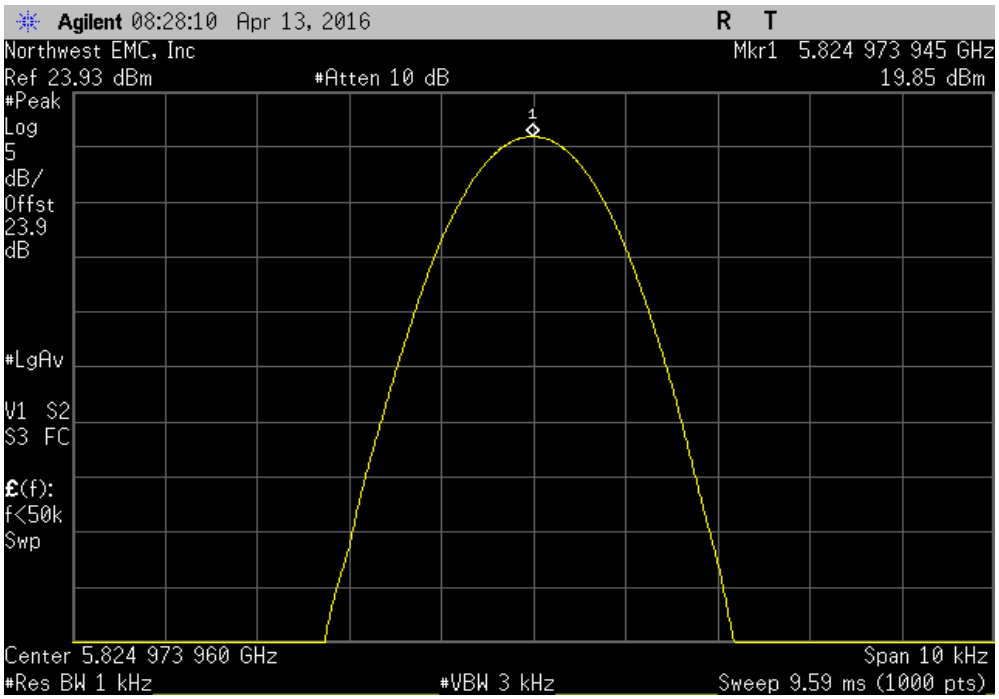
DEVIATIONS FROM TEST STANDARD

None

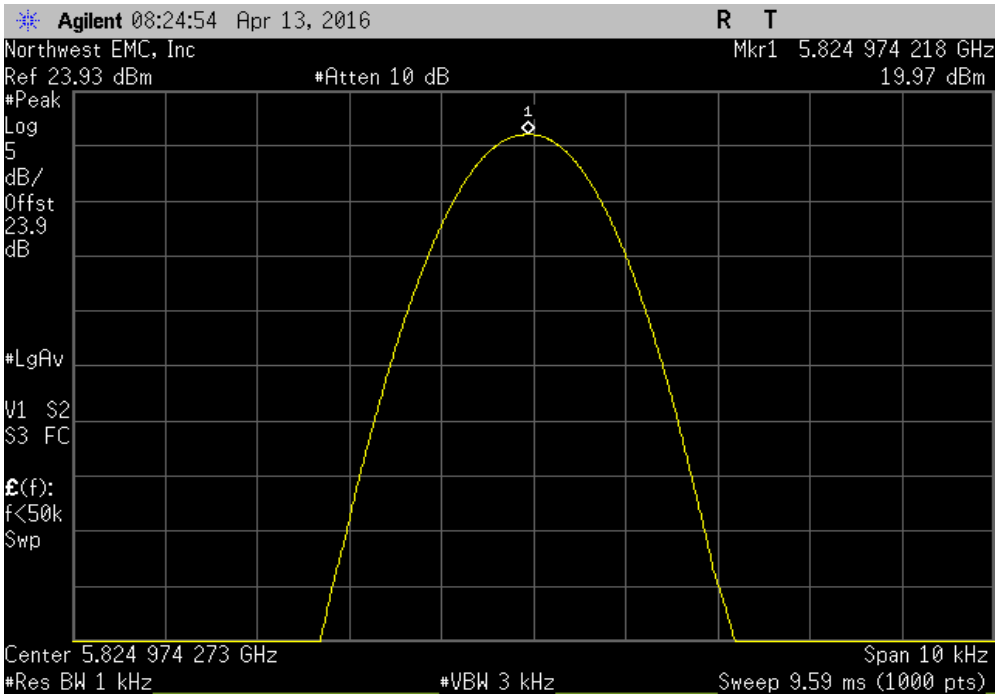
Configuration #	1	Signature

	Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
5725 MHz - 5850 MHz Band					
Voltage: 115%					
High Channel 165, 5825 MHz	5824.973945	5825	4.5	100	Pass
Voltage: 100%					
High Channel 165, 5825 MHz	5824.974218	5825	4.4	100	Pass
Voltage: 85%					
High Channel 165, 5825 MHz	5824.973627	5825	4.5	100	Pass
Temperature: +40°					
High Channel 165, 5825 MHz	5824.975153	5825	4.3	100	Pass
Temperature: +30°					
High Channel 165, 5825 MHz	5824.973946	5825	4.5	100	Pass
Temperature: +20°					
High Channel 165, 5825 MHz	5824.978493	5825	3.7	100	Pass
Temperature: +10°					
High Channel 165, 5825 MHz	5824.987084	5825	2.2	100	Pass
Temperature: 0°					
High Channel 165, 5825 MHz	5824.996115	5825	0.7	100	Pass

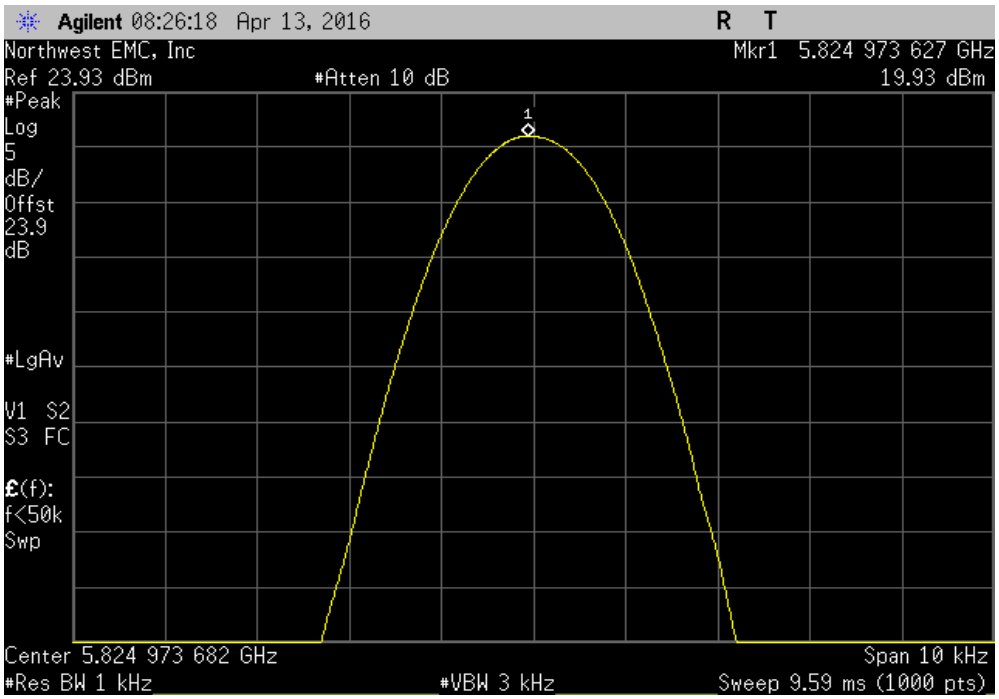
5725 MHz - 5850 MHz Band, Voltage: 115%, High Channel 165, 5825 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.973945	5825	4.5	100	Pass



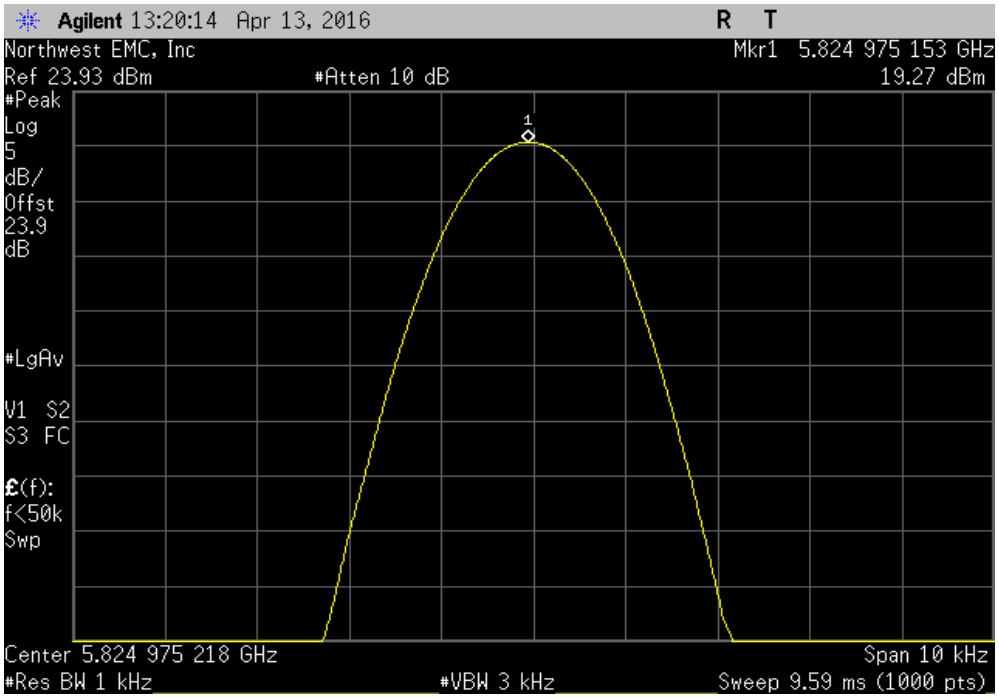
5725 MHz - 5850 MHz Band, Voltage: 100%, High Channel 165, 5825 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.974218	5825	4.4	100	Pass



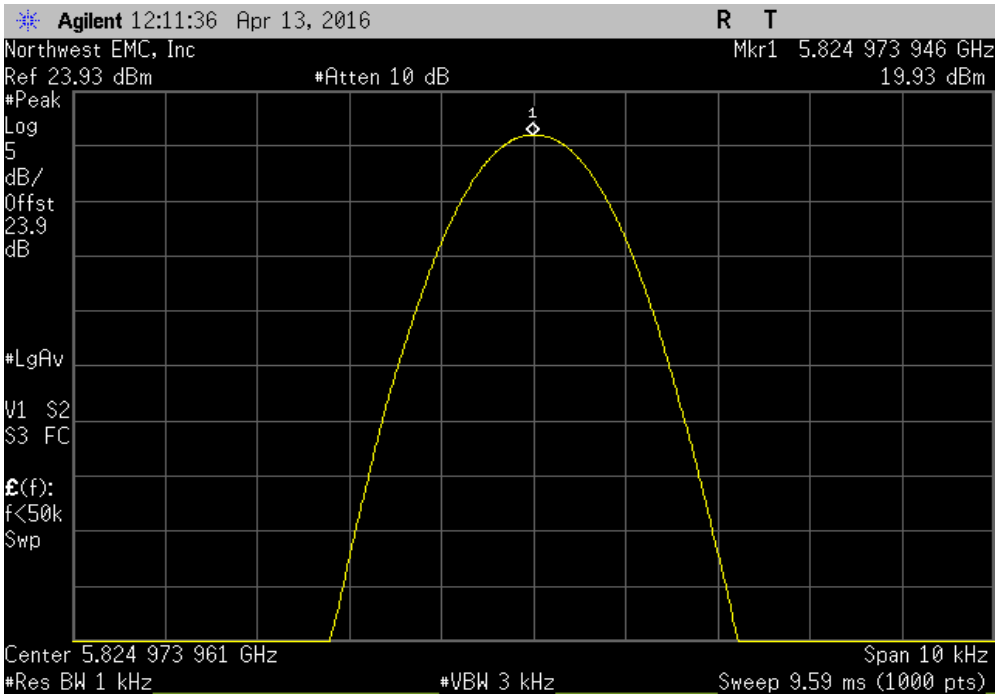
5725 MHz - 5850 MHz Band, Voltage: 85%, High Channel 165, 5825 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.973627	5825	4.5	100	Pass



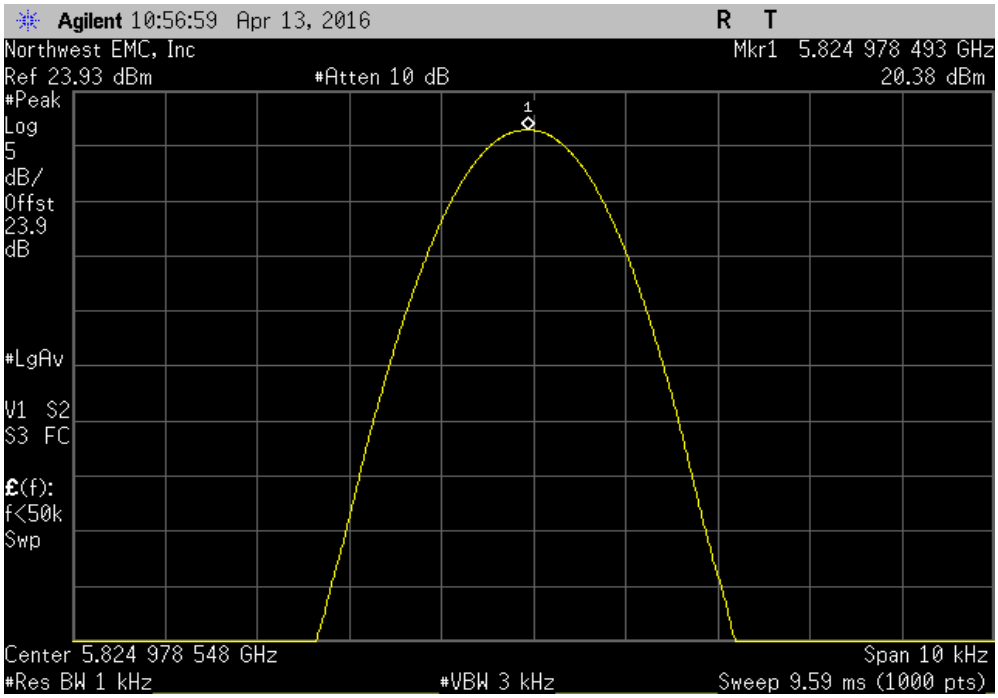
5725 MHz - 5850 MHz Band, Temperature: +40°, High Channel 165, 5825 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.975153	5825	4.3	100	Pass



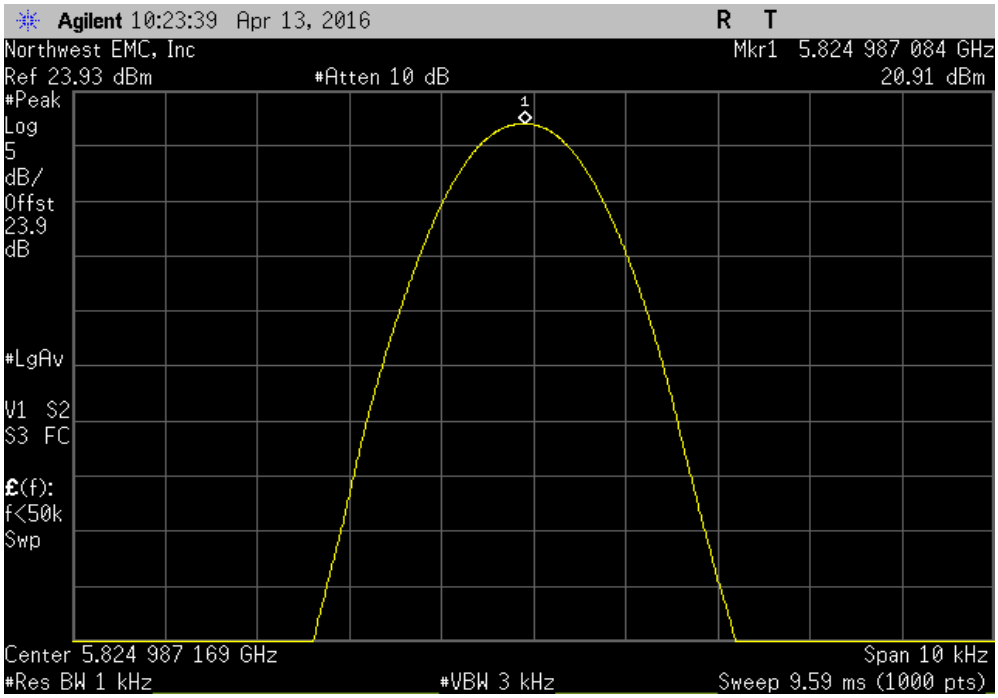
5725 MHz - 5850 MHz Band, Temperature: +30°, High Channel 165, 5825 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.973946	5825	4.5	100	Pass



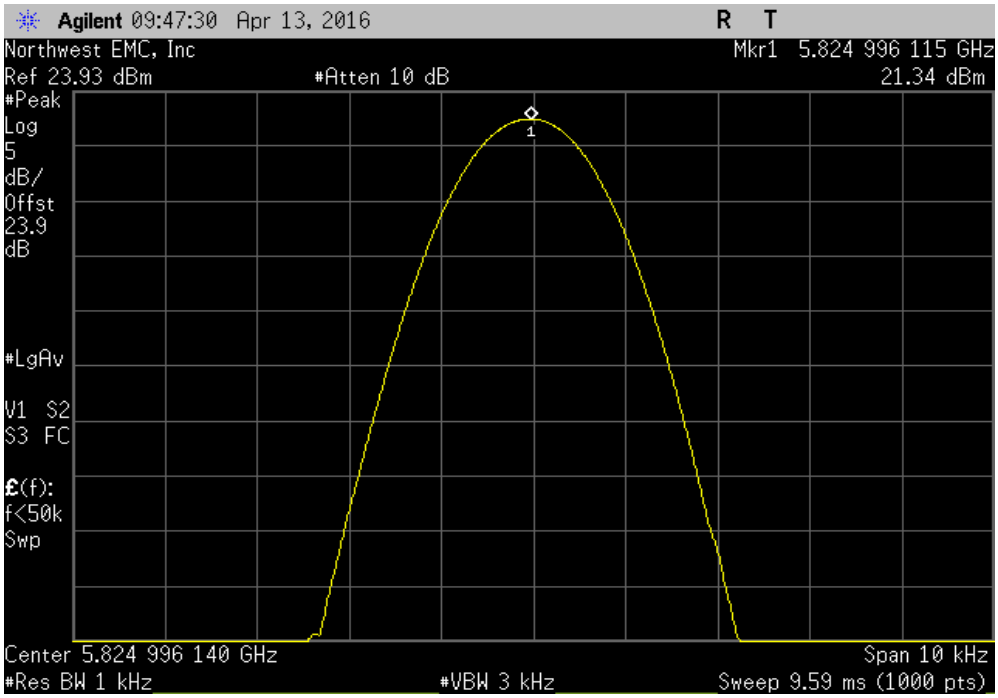
5725 MHz - 5850 MHz Band, Temperature: +20°, High Channel 165, 5825 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.978493	5825	3.7	100	Pass



5725 MHz - 5850 MHz Band, Temperature: +10°, High Channel 165, 5825 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.987084	5825	2.2	100	Pass



5725 MHz - 5850 MHz Band, Temperature: 0°, High Channel 165, 5825 MHz						
		Measured Value (MHz)	Assigned Value (MHz)	Error (ppm)	Limit (ppm)	Results
		5824.996115	5825	0.7	100	Pass



DUTY CYCLE

XMit 2015.01.14

Testing was performed using the mode(s) of operation and configuration(s) noted within the report. The individuals and/or the organization requesting the test provided the modes, configurations and settings used to complete the evaluation. The actual test parameters are specified in the test data, this includes items such as investigated frequency range (scanned) and test levels. The testing methods and performance specifications, as well as the test site used for the evaluation are indicated in the test data.

TEST EQUIPMENT

Description	Manufacturer	Model	ID	Last Cal.	Interval (mo)
Analyzer - Spectrum Analyzer	Agilent	E4440A	AFE	6/22/2015	12
Block - DC	Fairview Microwave	SD3379	AMJ	6/6/2015	12
Attenuator	Fairview Microwave	SA4014-20	TKV	3/4/2016	12
Cable	ESM Cable Corp.	TTBJ-141 KMKM-72	NC5	6/6/2015	12
Generator - Signal	Agilent	N5183A	TID	11/26/2014	36

TEST DESCRIPTION

The Duty Cycle (x) of the single channel operation of the radio as controlled by the provided test software was measured for each of the EUT operating modes.

There is no compliance requirement to be met by this test, so therefore no Pass / Fail criteria.

The measurements were made using a zero span on the spectrum analyzer to see the pulses in the time domain. The transmit power was set to its default maximum. A direct connection was made between the RF output of the EUT and a spectrum analyzer. Attenuation and a DC block were used.

The duty cycle was calculated by dividing the transmission pulse duration (T) by the total period of a single on and total off time.

If the transmit duty cycle < 98 percent, burst gating may have been used during some of the other tests in this report to only take the measurement during the burst duration.

DUTY CYCLE

NORTHWEST EMC

XMit 2015.01.14

EUT:	Model 1631			Work Order:	MCSO1748
Serial Number:	041152140753			Date:	04/12/16
Customer:	Microsoft Corporation			Temperature:	23°C
Attendees:	None			Humidity:	33%
Project:	None			Barometric Pres.:	1019 mbar
Tested by:	Richard Mellroth	Power:	110VAC/60Hz	Job Site:	NC02

TEST SPECIFICATIONS	Test Method
FCC 15.407:2016	ANSI C63.10:2013

COMMENTS

Power setting at 11dBm for 20MHz and 40MHz channels. Power Setting at 10dBm for 80MHz channels. Client supplied adapter cable loss of 1.3dB included in reference level offset. Signal setting at > 95% Duty Cycle.

DEVIATIONS FROM TEST STANDARD

None

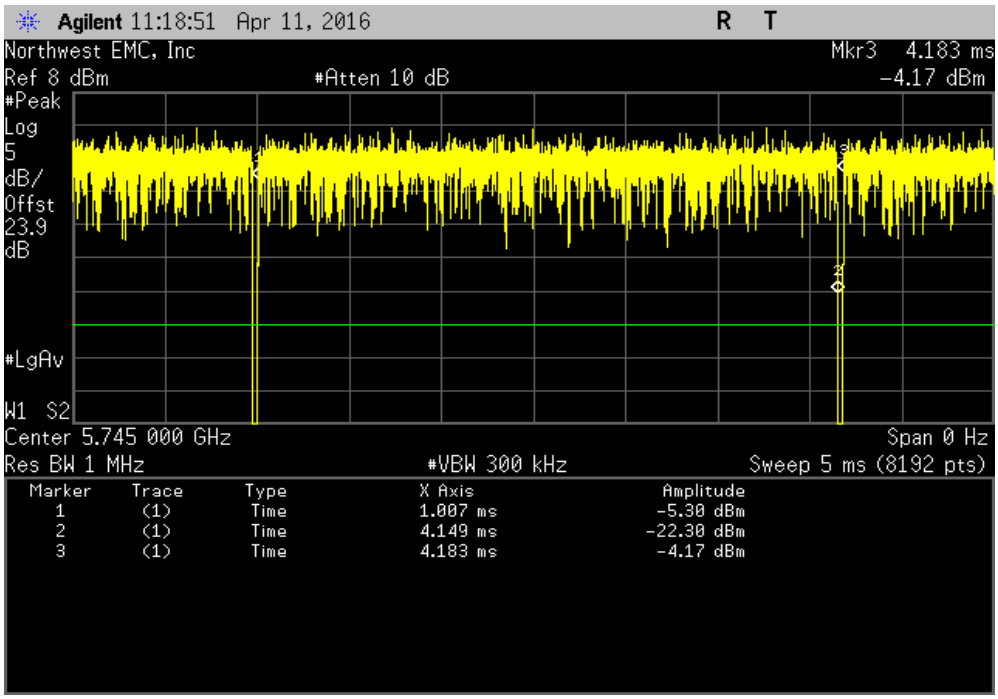
Configuration #	1	Signature

	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
SISO, Chain A						
20MHz BW						
Low Channel, Ch 149 - 5745 MHz						
802.11(a) 6 Mbps	3.142 ms	3.175 ms	1	98.9	N/A	N/A
802.11(a) 6 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 36 Mbps	537.9 us	571.4 us	1	94.1	N/A	N/A
802.11(a) 36 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 54 Mbps	333.332 us	368.497 us	1	90.5	N/A	N/A
802.11(a) 54 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0	2.918 ms	2.946 ms	1	99	N/A	N/A
802.11(n) MCS0	N/A	N/A	6	N/A	N/A	N/A
802.11(n) MCS7	322.1 us	355.8 us	1	90.5	N/A	N/A
802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS0	2.93 ms	2.958 ms	1	99.1	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS8	278.1 us	305.7 us	1	91	N/A	N/A
802.11(ac) MCS8	N/A	N/A	6	N/A	N/A	N/A
Mid Channel, Ch 157 - 5785 MHz						
802.11(a) 6 Mbps	3.142 ms	3.175 ms	1	98.9	N/A	N/A
802.11(a) 6 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 36 Mbps	537.9 us	571.6 us	1	94.1	N/A	N/A
802.11(a) 36 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 54 Mbps	361.8 us	395.3 us	1	91.5	N/A	N/A
802.11(a) 54 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0	2.918 ms	2.951 ms	1	98.9	N/A	N/A
802.11(n) MCS0	N/A	N/A	6	N/A	N/A	N/A
802.11(n) MCS7	321.8 us	355.5 us	1	90.5	N/A	N/A
802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS0	2.93 ms	2.958 ms	1	99.1	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS8	277.9 us	305.7 us	1	90.9	N/A	N/A
802.11(ac) MCS8	N/A	N/A	6	N/A	N/A	N/A
High Channel, Ch 165 - 5825 MHz						
802.11(a) 6 Mbps	3.142 ms	3.175 ms	1	98.9	N/A	N/A
802.11(a) 6 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 36 Mbps	537.7 us	571.3 us	1	94.1	N/A	N/A
802.11(a) 36 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 54 Mbps	361.9 us	395.6 us	1	91.5	N/A	N/A
802.11(a) 54 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0	2.918 ms	2.951 ms	1	98.9	N/A	N/A
802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7	321.9 us	353.6 us	1	91	N/A	N/A
802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS0	2.93 ms	2.958 ms	1	99.1	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS8	277.9 us	305.7 us	1	90.9	N/A	N/A
802.11(ac) MCS8	N/A	N/A	6	N/A	N/A	N/A
40MHz BW						
Low Channel, Ch 149/153 - 5755 MHz						
802.11(n) MCS0	1.397 ms	1.456 ms	1	95.9	N/A	N/A
802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7	144.3 us	203.4 us	1	70.9	N/A	N/A
802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS0	1.405 ms	1.458 ms	1	96.4	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS9	116.5 us	169.5 us	1	68.7	N/A	N/A
802.11(ac) MCS9	N/A	N/A	5	N/A	N/A	N/A
High Channel, Ch 157/161 - 5795 MHz						
802.11(n) MCS0	1.397 ms	1.45 ms	1	96.3	N/A	N/A
802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7	144.5 us	203.6 us	1	71	N/A	N/A
802.11(n) MCS7	N/A	N/A	6	N/A	N/A	N/A
802.11(ac) MCS0	1.405 ms	1.458 ms	1	96.4	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS9	116.5 us	169.7 us	1	68.7	N/A	N/A
802.11(ac) MCS9	N/A	N/A	5	N/A	N/A	N/A
80MHz BW						
Mid Channel, Ch 149/161 - 5775 MHz						
802.11(ac) MCS0	658.3 us	709.5 us	1	92.8	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS9	74.264 us	113.264 us	1	65.6	N/A	N/A
802.11(ac) MCS9	N/A	N/A	5	N/A	N/A	N/A

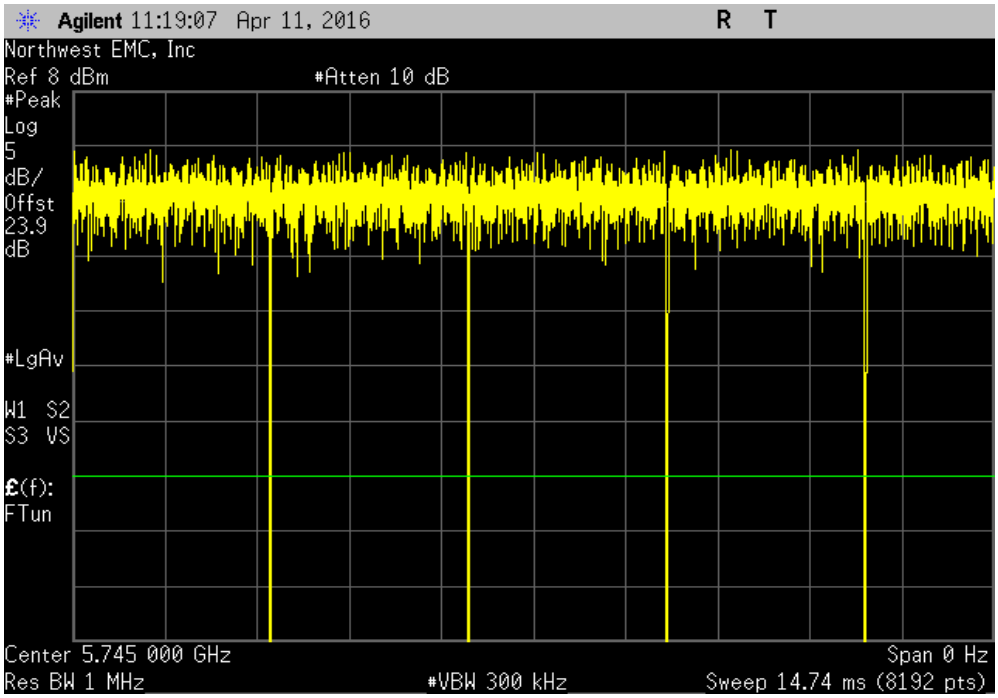
SISO, Chain B							
20MHz BW							
Low Channel, Ch 149 - 5745 MHz							
802.11(a) 6 Mbps	3.142 ms	3.169 ms	1	99.1	N/A	N/A
802.11(a) 6 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 36 Mbps	537.9 us	569.7 us	1	94.4	N/A	N/A
802.11(a) 36 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 54 Mbps	361.8 us	395.5 us	1	91.5	N/A	N/A
802.11(a) 54 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0	2.918 ms	2.946 ms	1	99	N/A	N/A
802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7	322.1 us	355.8 us	1	90.5	N/A	N/A
802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS0	2.93 ms	2.958 ms	1	99.1	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS8	277.9 us	305.7 us	1	90.9	N/A	N/A
802.11(ac) MCS8	N/A	N/A	5	N/A	N/A	N/A
Mid Channel, Ch 157 - 5785 MHz						
802.11(a) 6 Mbps	3.143 ms	3.17 ms	1	99.1	N/A	N/A
802.11(a) 6 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 36 Mbps	537.9 us	569.7 us	1	94.4	N/A	N/A
802.11(a) 36 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 54 Mbps	361.9 us	395.1 us	1	91.6	N/A	N/A
802.11(a) 54 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0	2.918 ms	2.945 ms	1	99.1	N/A	N/A
802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7	321.8 us	355.5 us	1	90.5	N/A	N/A
802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS0	2.93 ms	2.958 ms	1	99.1	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS8	277.8 us	305.4 us	1	91	N/A	N/A
802.11(ac) MCS8	N/A	N/A	5	N/A	N/A	N/A
High Channel, Ch 165 - 5825 MHz						
802.11(a) 6 Mbps	3.142 ms	3.169 ms	1	99.1	N/A	N/A
802.11(a) 6 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 36 Mbps	538.2 us	571.6 us	1	94.2	N/A	N/A
802.11(a) 36 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(a) 54 Mbps	362.1 us	395.5 us	1	91.6	N/A	N/A
802.11(a) 54 Mbps	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS0	2.918 ms	2.946 ms	1	99	N/A	N/A
802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7	321.8 us	355.5 us	1	90.5	N/A	N/A
802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS0	2.93 ms	2.958 ms	1	99.1	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS8	277.6 us	305.4 us	1	90.9	N/A	N/A
802.11(ac) MCS8	N/A	N/A	5	N/A	N/A	N/A
40MHz BW						
Low Channel, Ch 149/153 - 5755 MHz						
802.11(n) MCS0	1.397 ms	1.456 ms	1	95.9	N/A	N/A
802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7	146.1 us	205.1 us	1	71.2	N/A	N/A
802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS0	1.406 ms	1.457 ms	1	96.5	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS9	116.5 us	169.7 us	1	68.7	N/A	N/A
802.11(ac) MCS9	N/A	N/A	6	N/A	N/A	N/A
High Channel, Ch 157/161 - 5795 MHz						
802.11(n) MCS0	1.397 ms	1.456 ms	1	95.9	N/A	N/A
802.11(n) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(n) MCS7	144 us	203.4 us	1	70.8	N/A	N/A
802.11(n) MCS7	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS0	1.404 ms	1.458 ms	1	96.3	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS9	116.2 us	170.1 us	1	68.3	N/A	N/A
802.11(ac) MCS9	N/A	N/A	6	N/A	N/A	N/A
80MHz BW						
Mid Channel, Ch 149/161 - 5775 MHz						
802.11(ac) MCS0	666.4 us	705.4 us	1	94.5	N/A	N/A
802.11(ac) MCS0	N/A	N/A	5	N/A	N/A	N/A
802.11(ac) MCS9	74 us	113.3 us	1	65.3	N/A	N/A
802.11(ac) MCS9	N/A	N/A	5	N/A	N/A	N/A

DUTY CYCLE

SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	3.142 ms	3.175 ms	1	98.9	N/A	N/A



SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

NORTHWEST EMC
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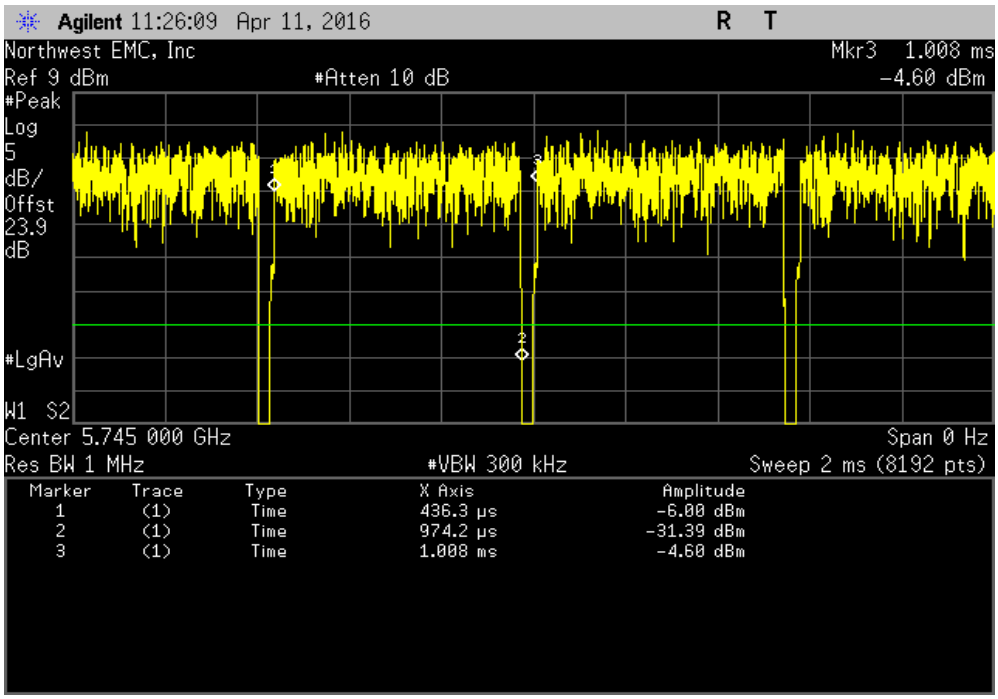
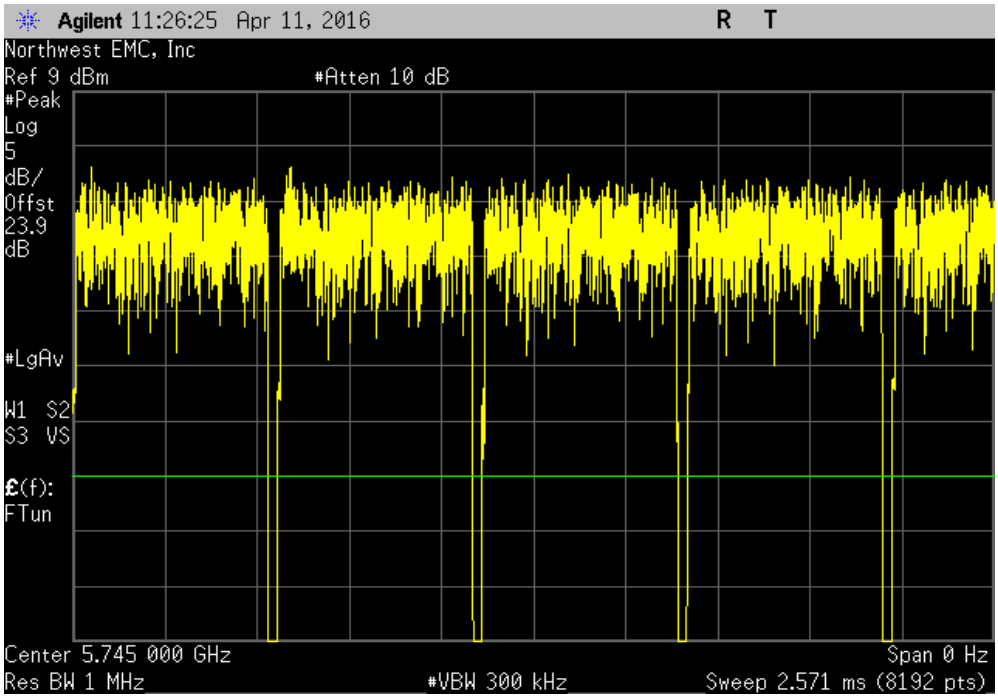
SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	537.9 us	571.4 us	1	94.1	N/A	N/A



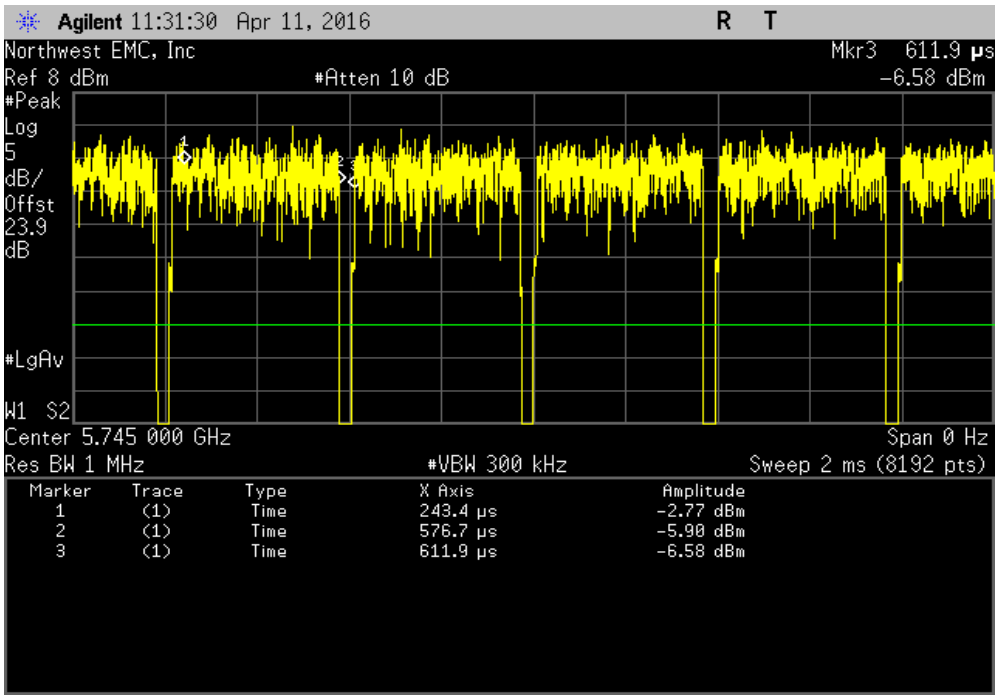
SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



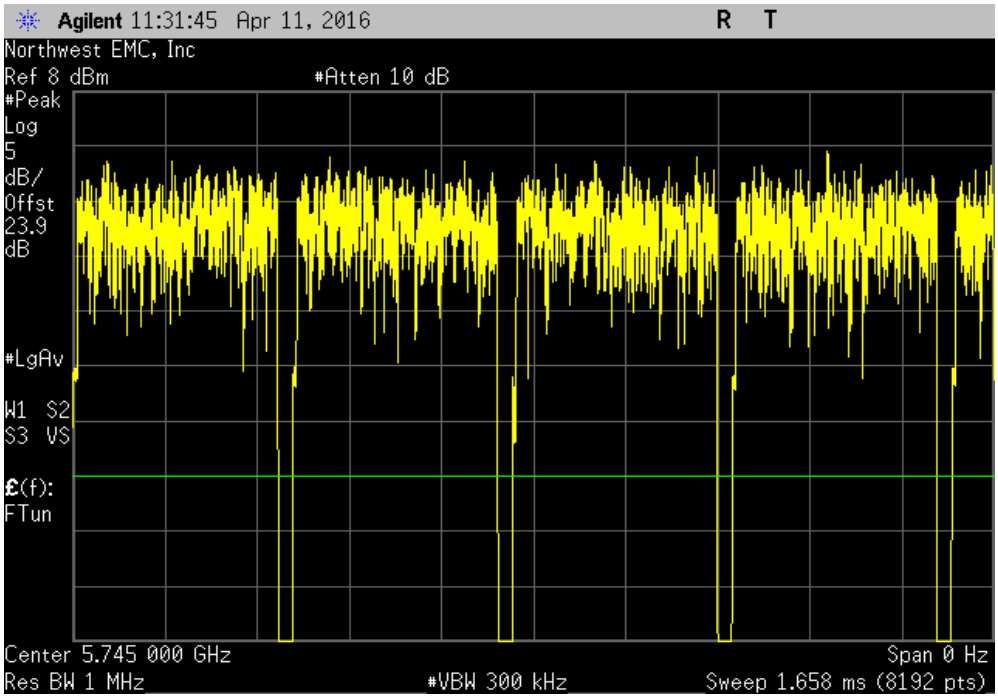
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	333.332 us	368.497 us	1	90.5	N/A	N/A



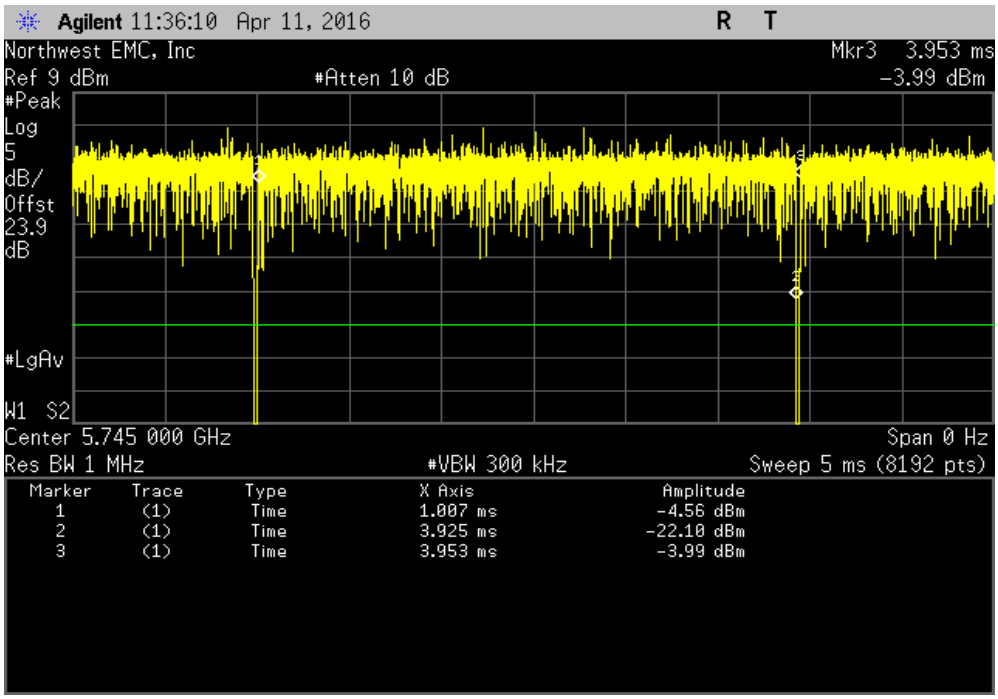
SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



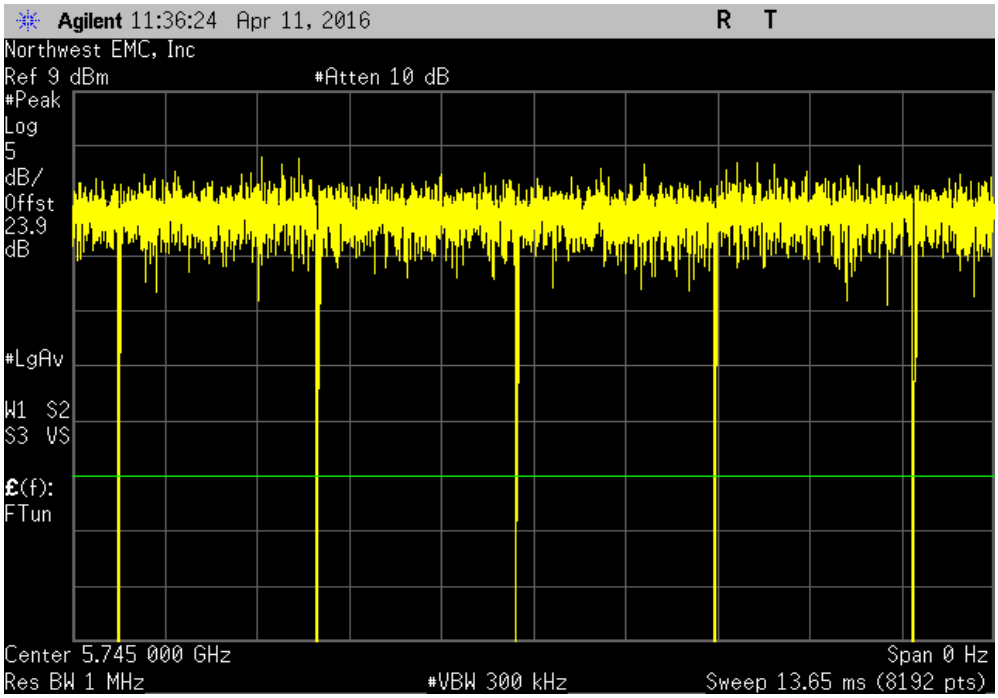
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.918 ms	2.946 ms	1	99	N/A	N/A



SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A

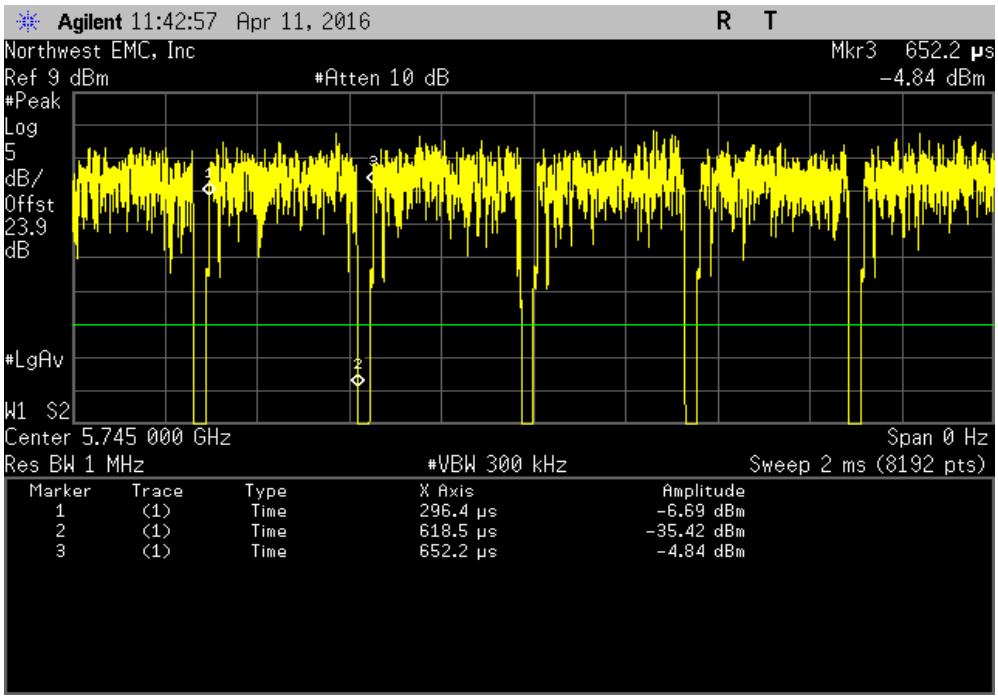


DUTY CYCLE

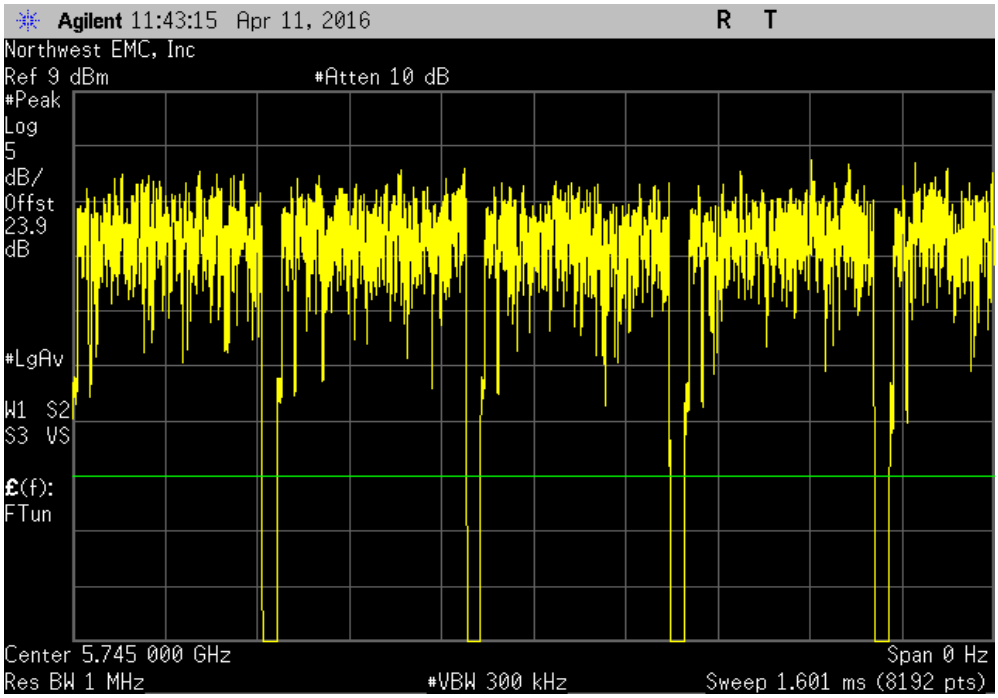
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	322.1 us	355.8 us	1	90.5	N/A	N/A



SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

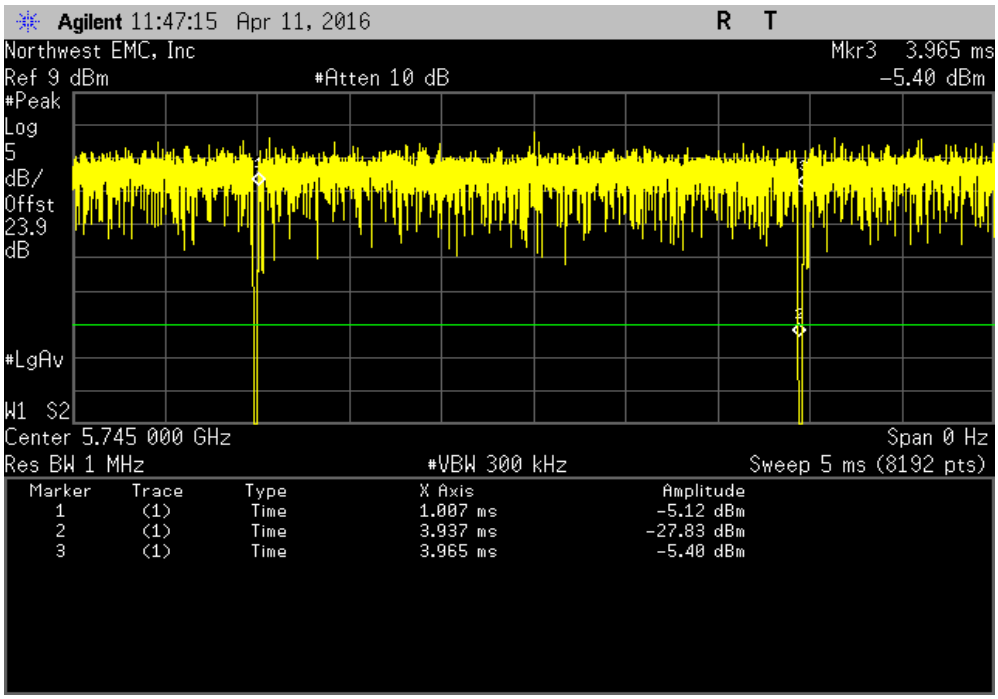


DUTY CYCLE

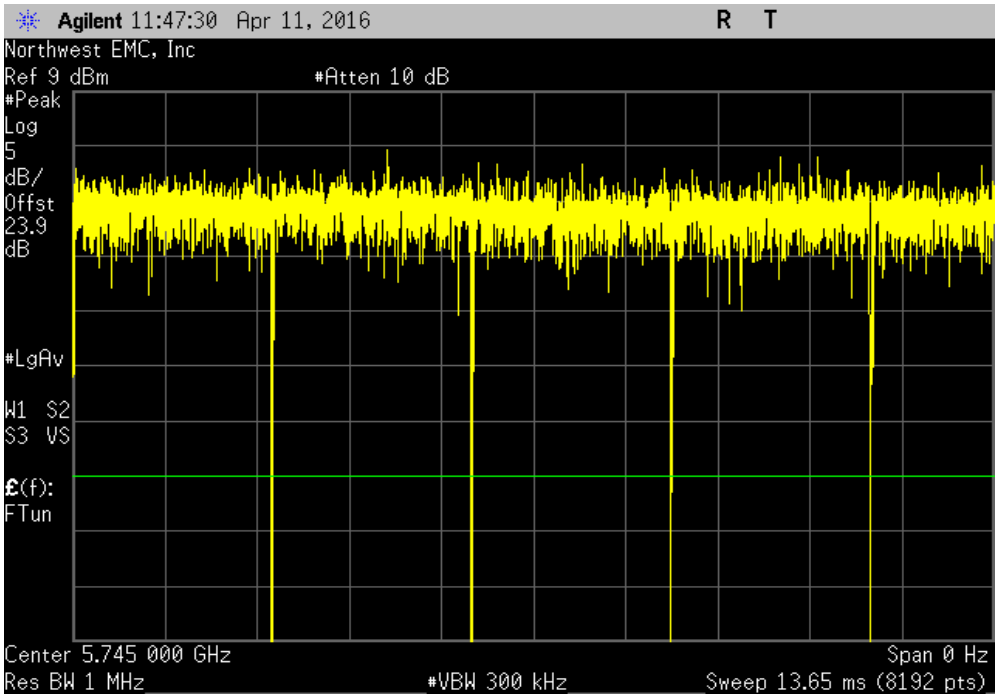
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.93 ms	2.958 ms	1	99.1	N/A	N/A

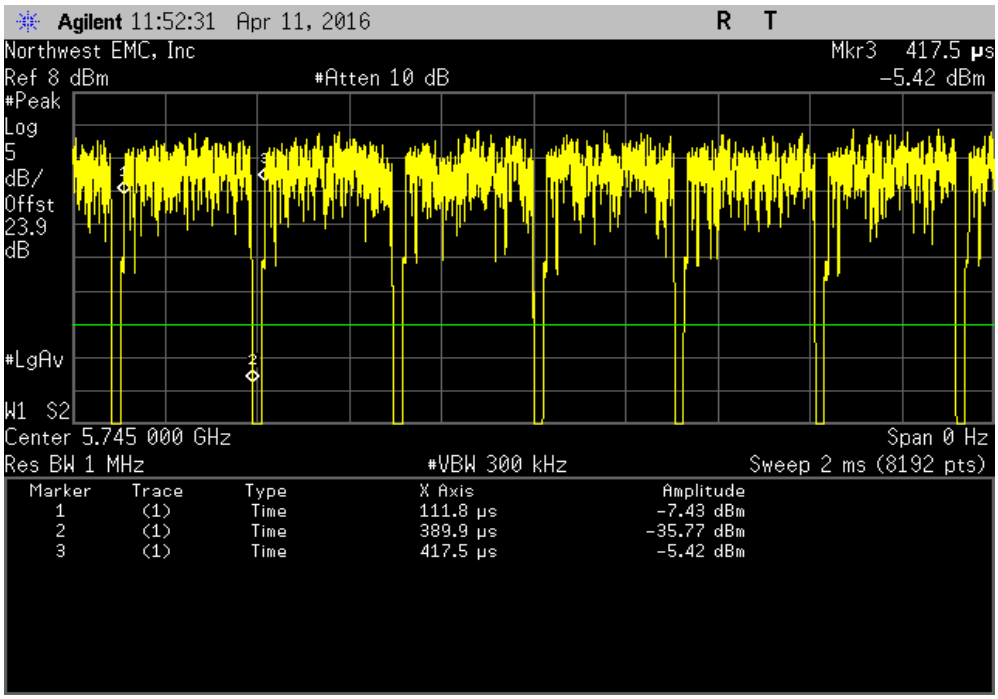


SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

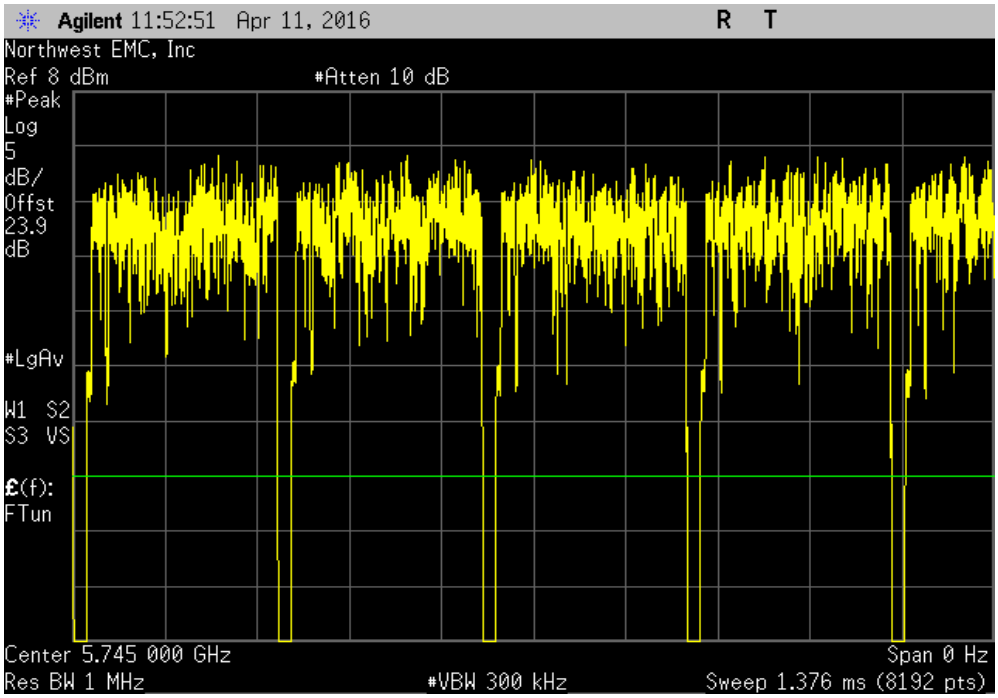


DUTY CYCLE

SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	278.1 us	305.7 us	1	91	N/A	N/A



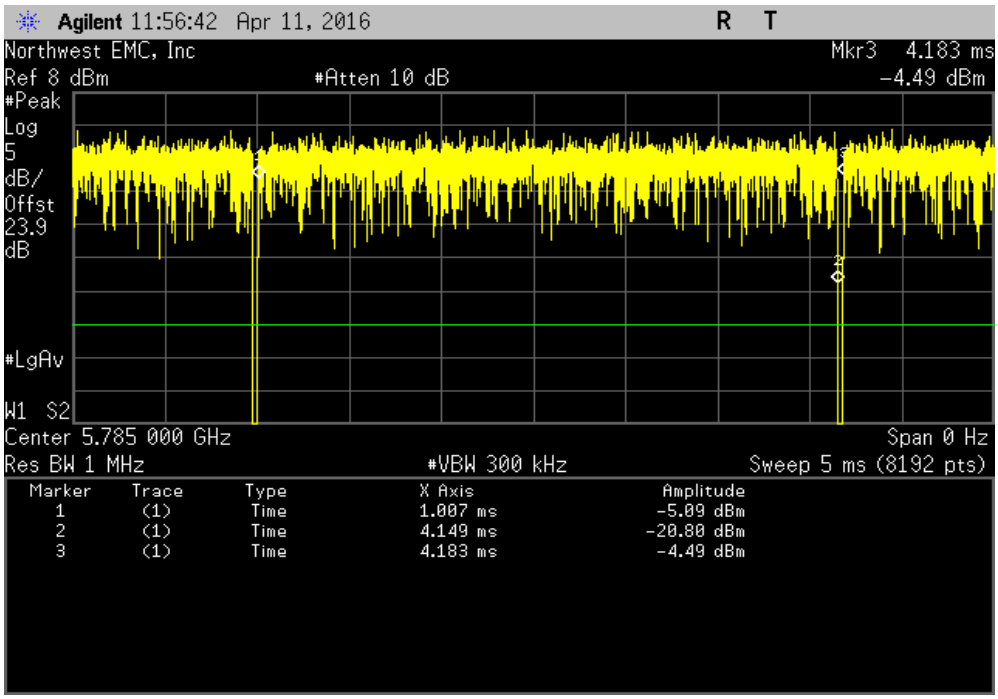
SISO, Chain A, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



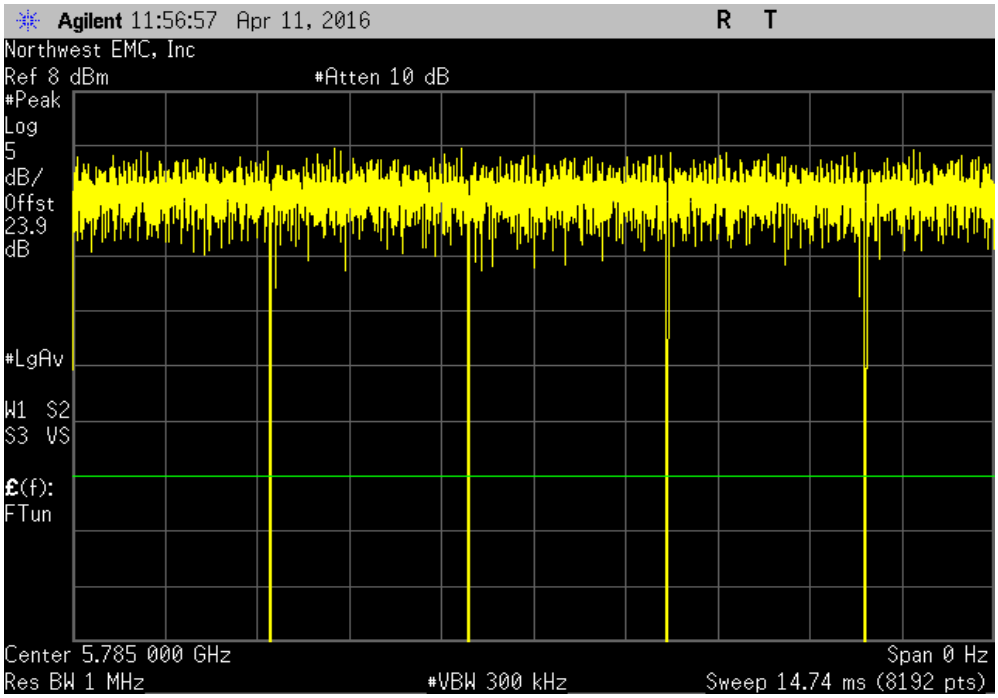
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	3.142 ms	3.175 ms	1	98.9	N/A	N/A

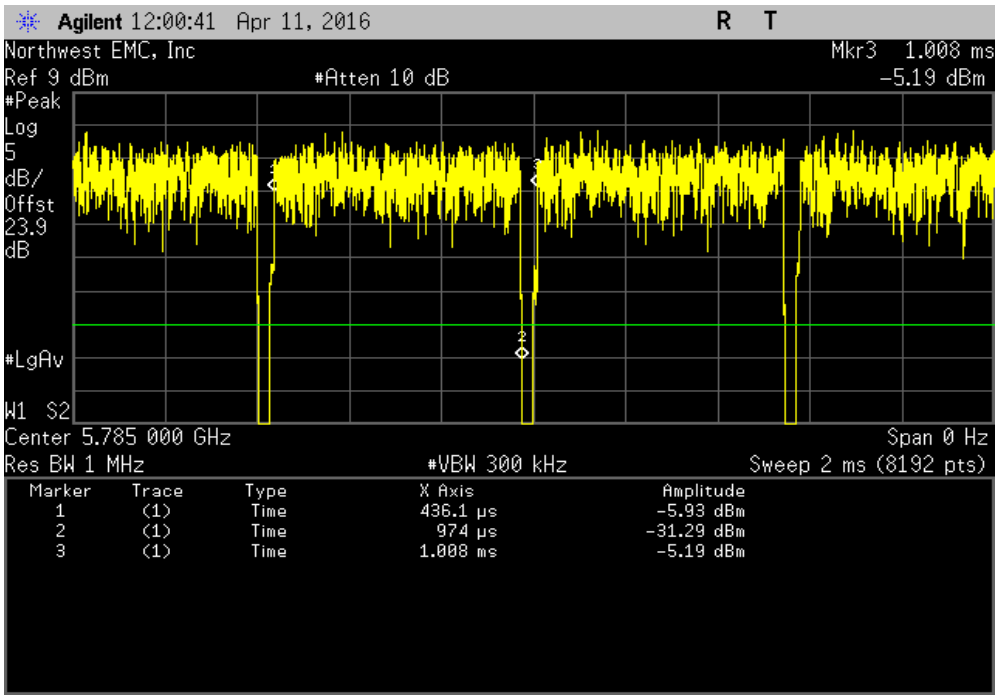


SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

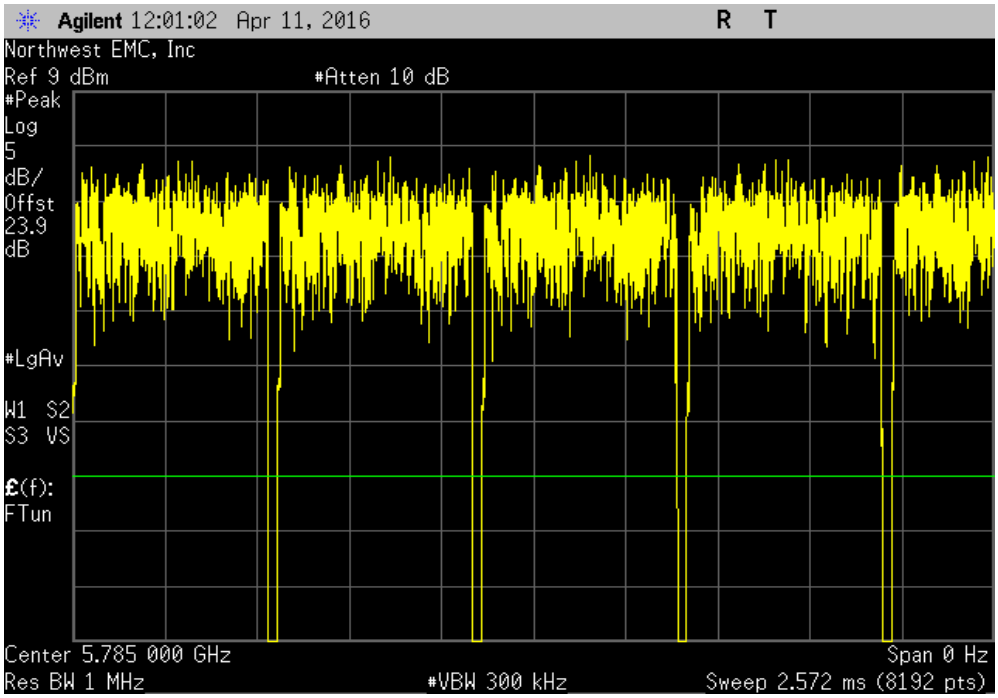


DUTY CYCLE

SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	537.9 us	571.6 us	1	94.1	N/A	N/A



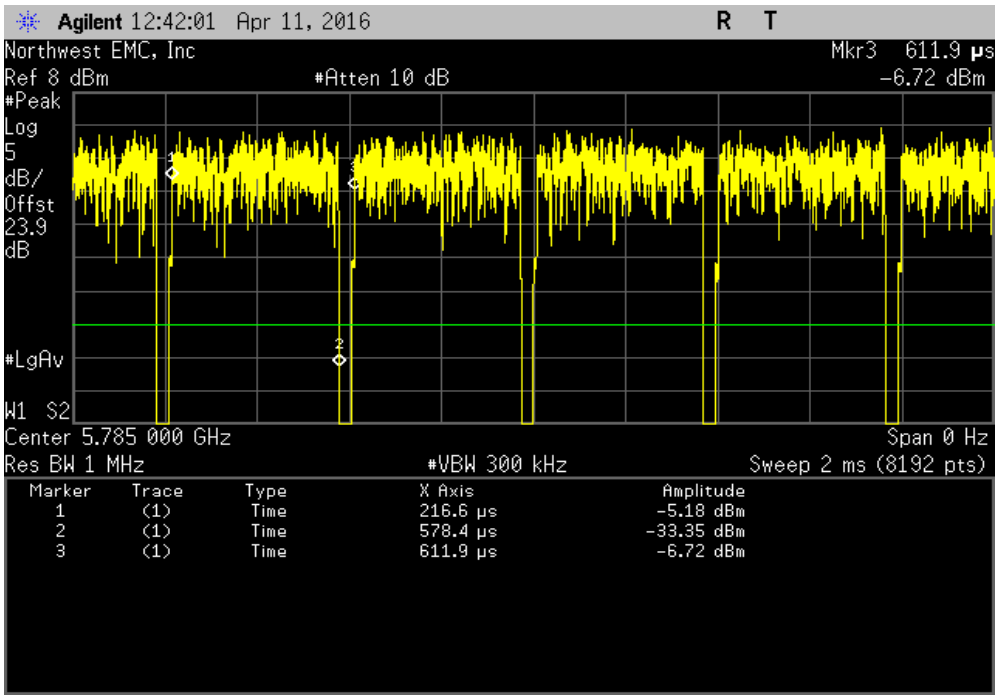
SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



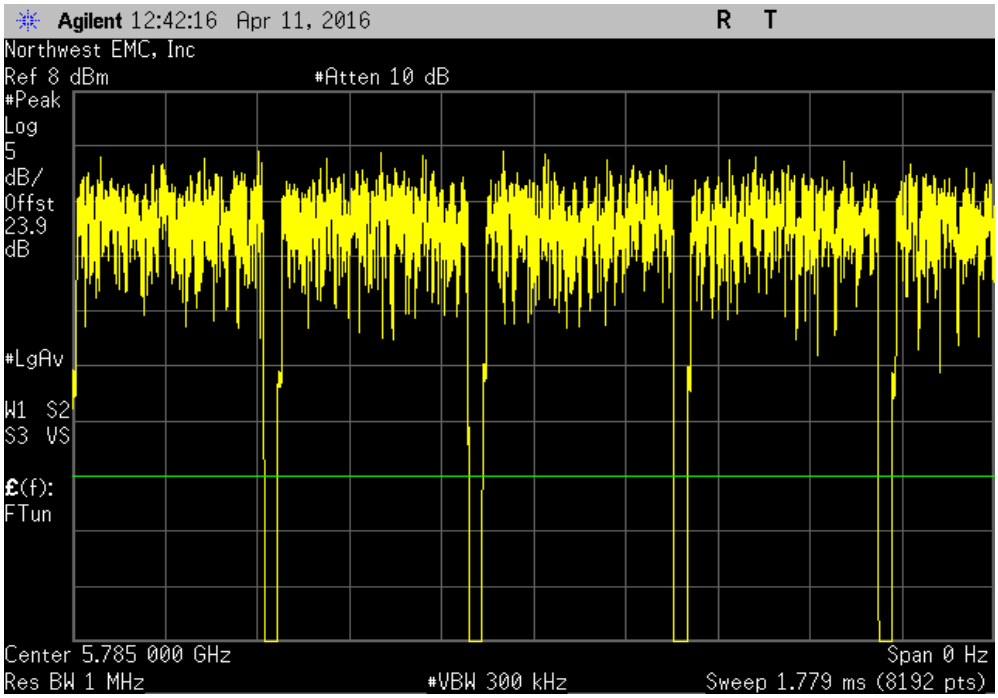
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	361.8 us	395.3 us	1	91.5	N/A	N/A



SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

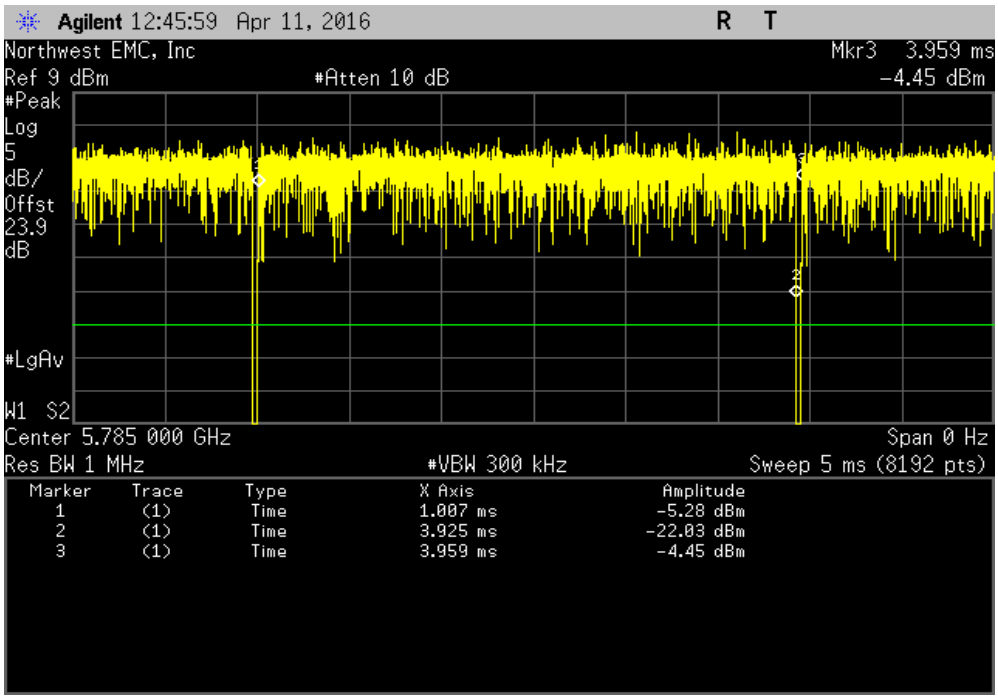


DUTY CYCLE

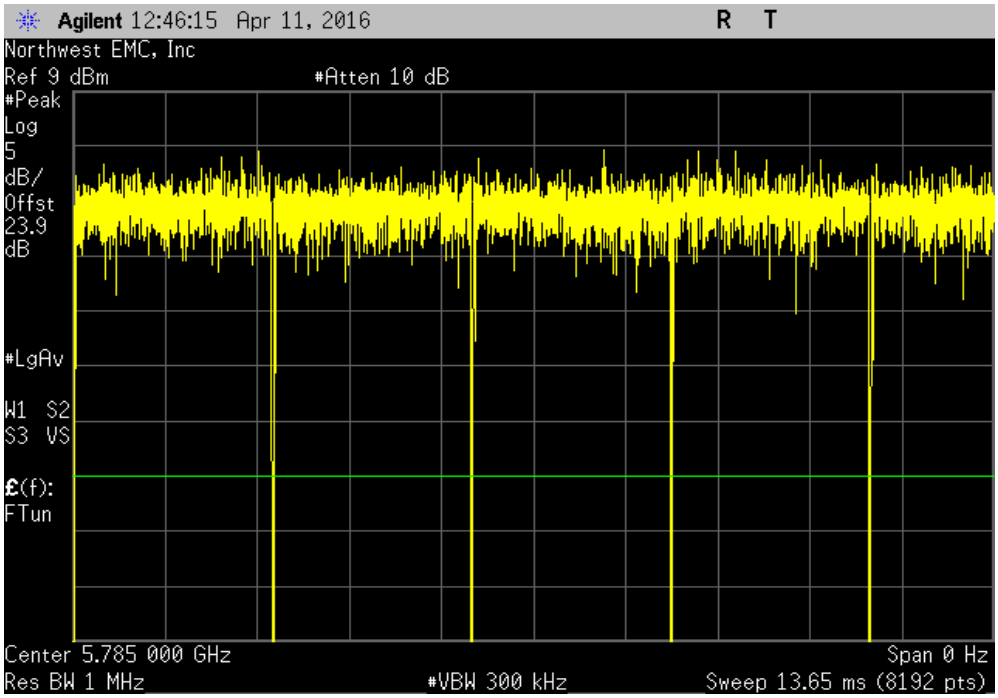
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.918 ms	2.951 ms	1	98.9	N/A	N/A



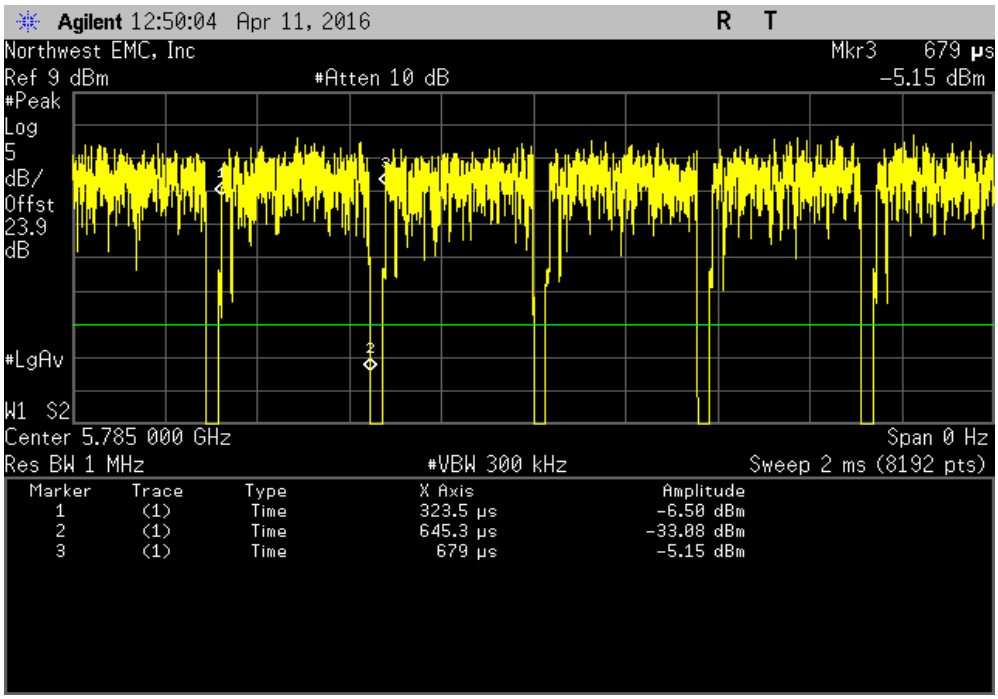
SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



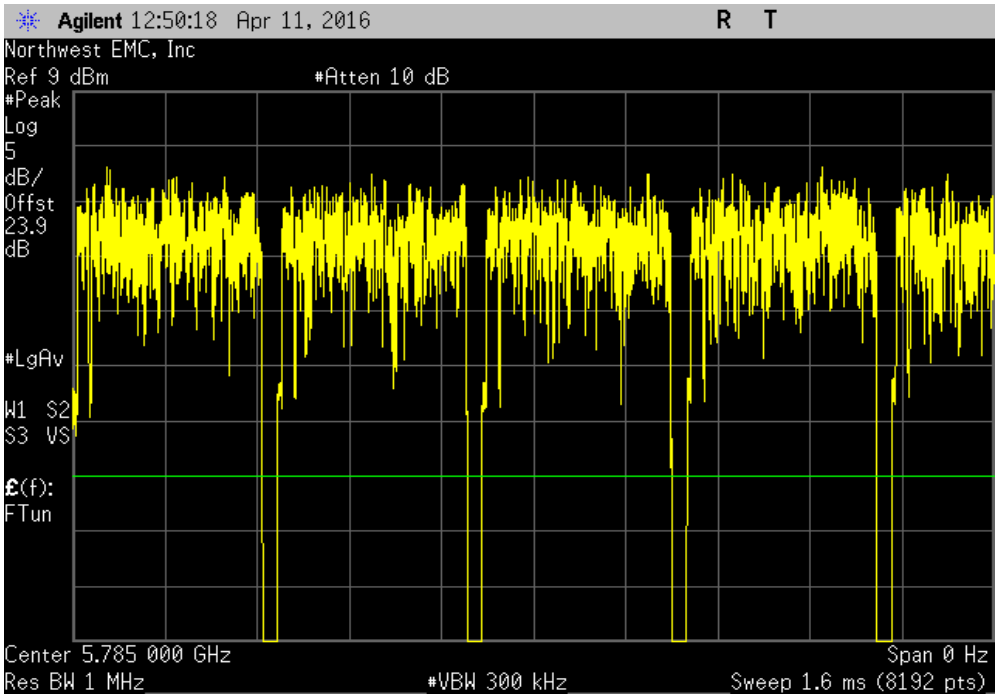
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	321.8 us	355.5 us	1	90.5	N/A	N/A



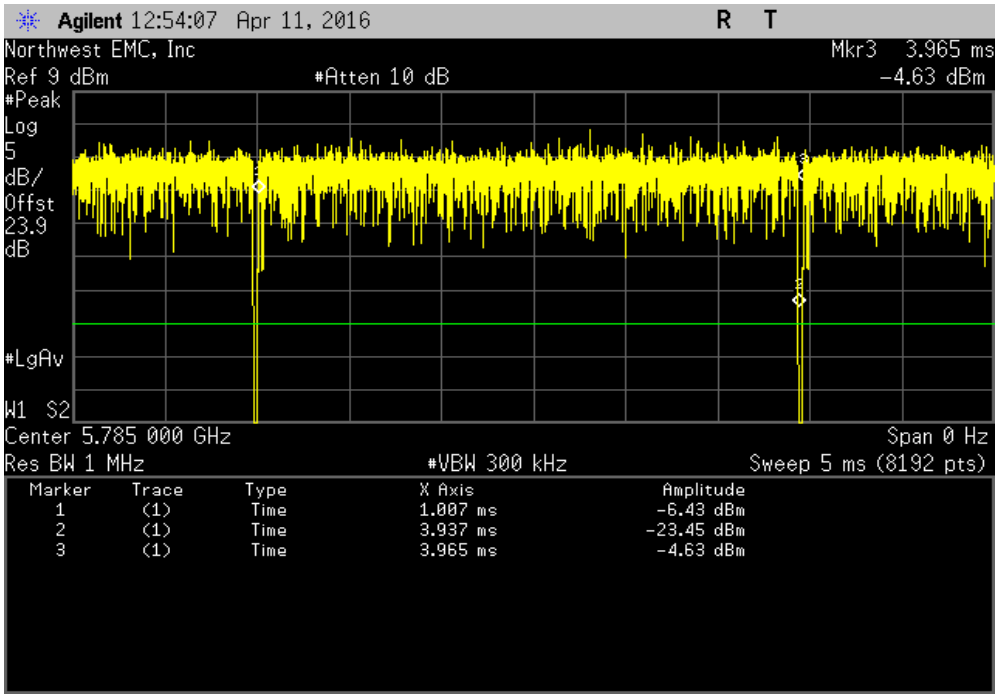
SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



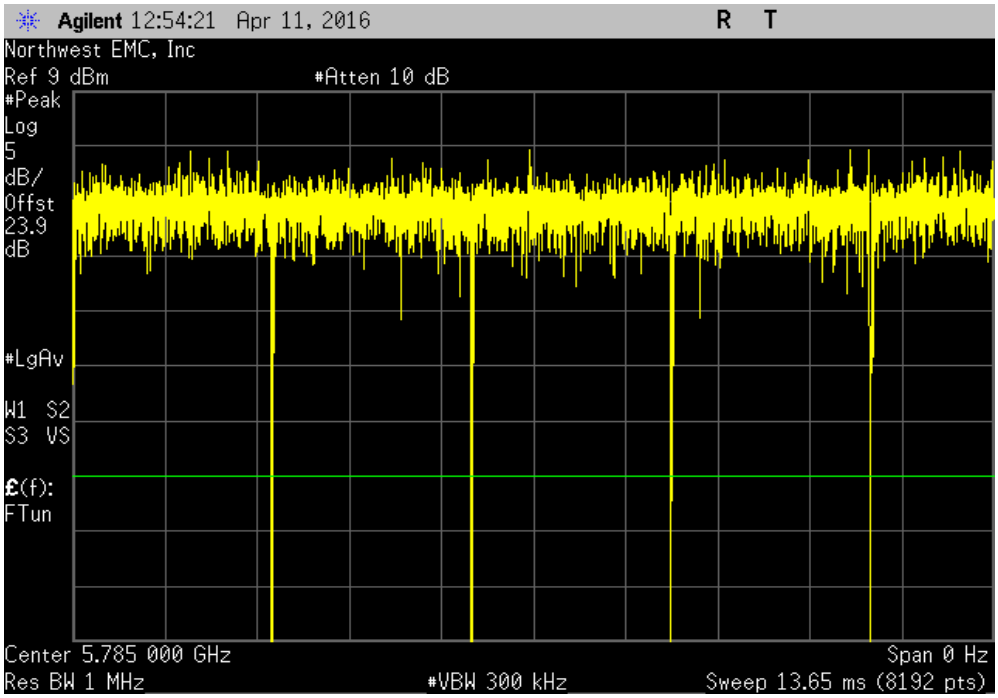
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.93 ms	2.958 ms	1	99.1	N/A	N/A



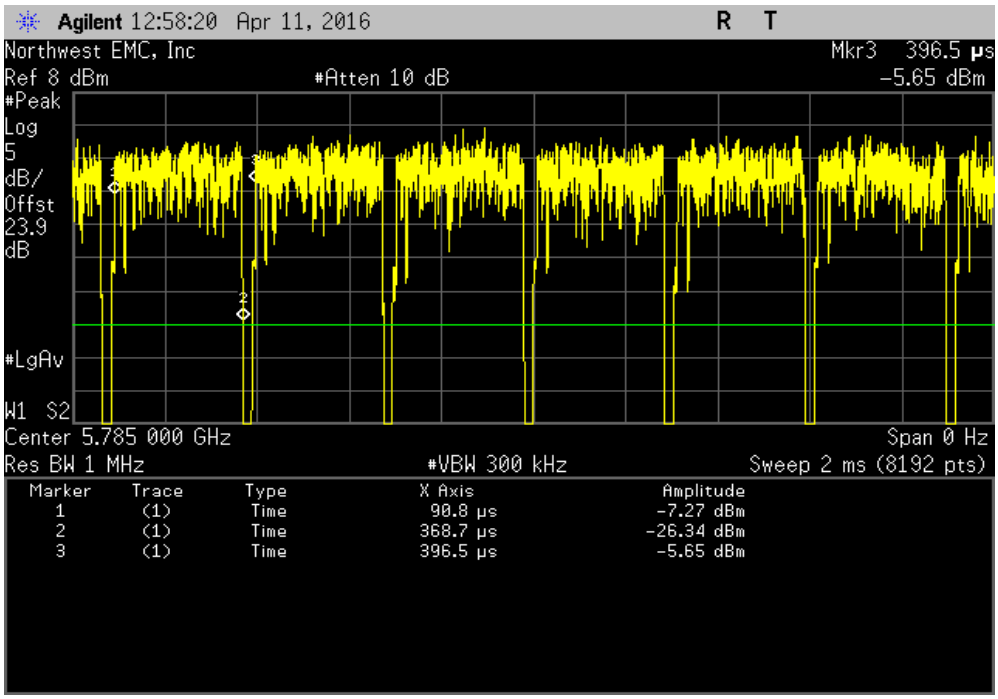
SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



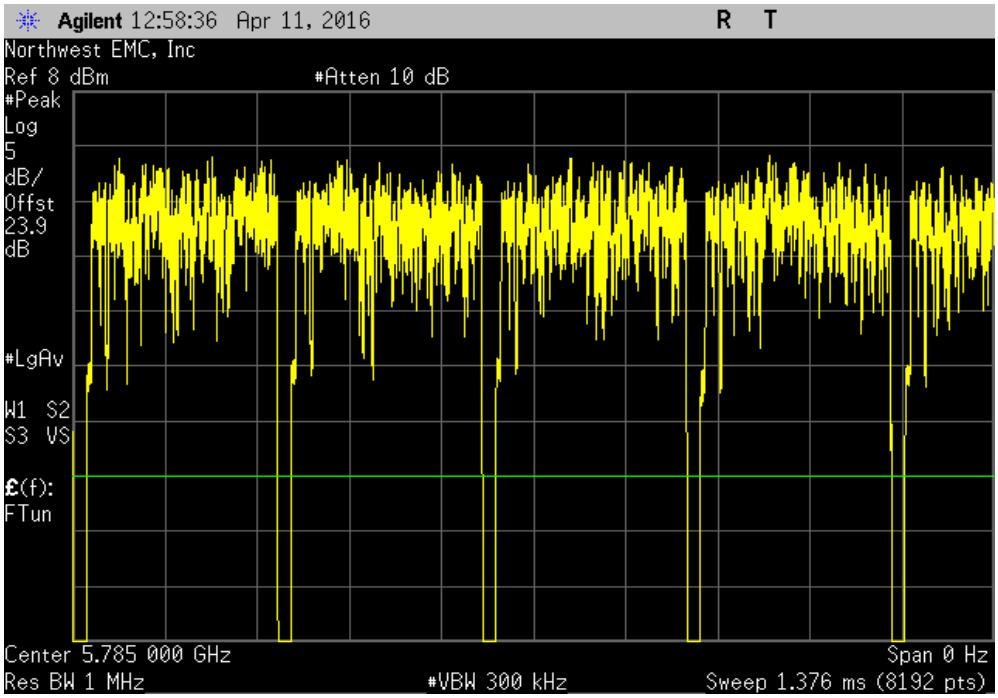
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	277.9 us	305.7 us	1	90.9	N/A	N/A



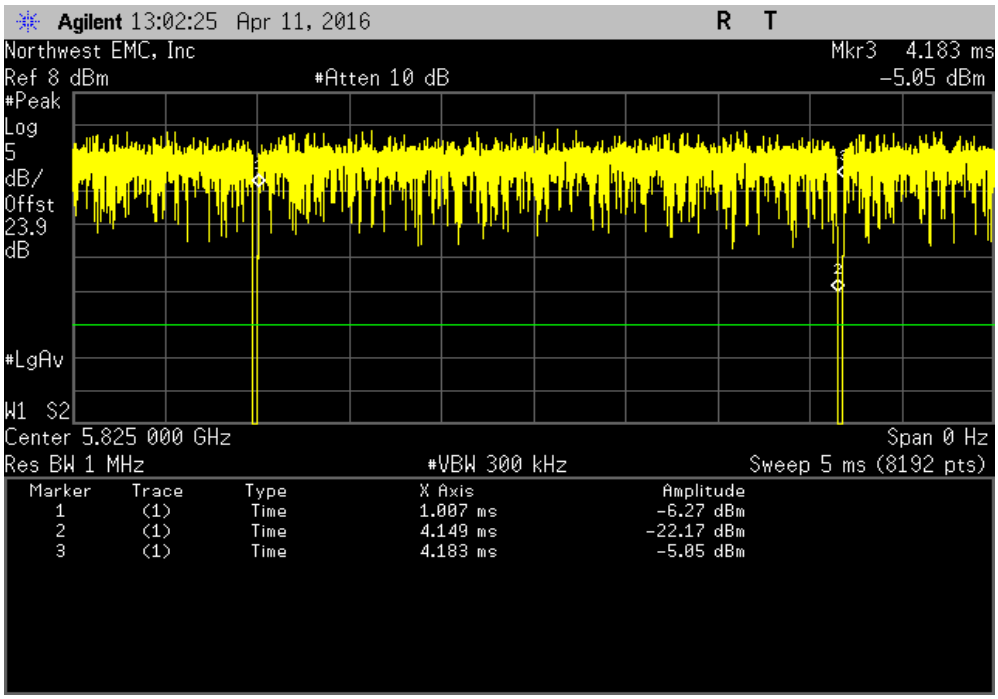
SISO, Chain A, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



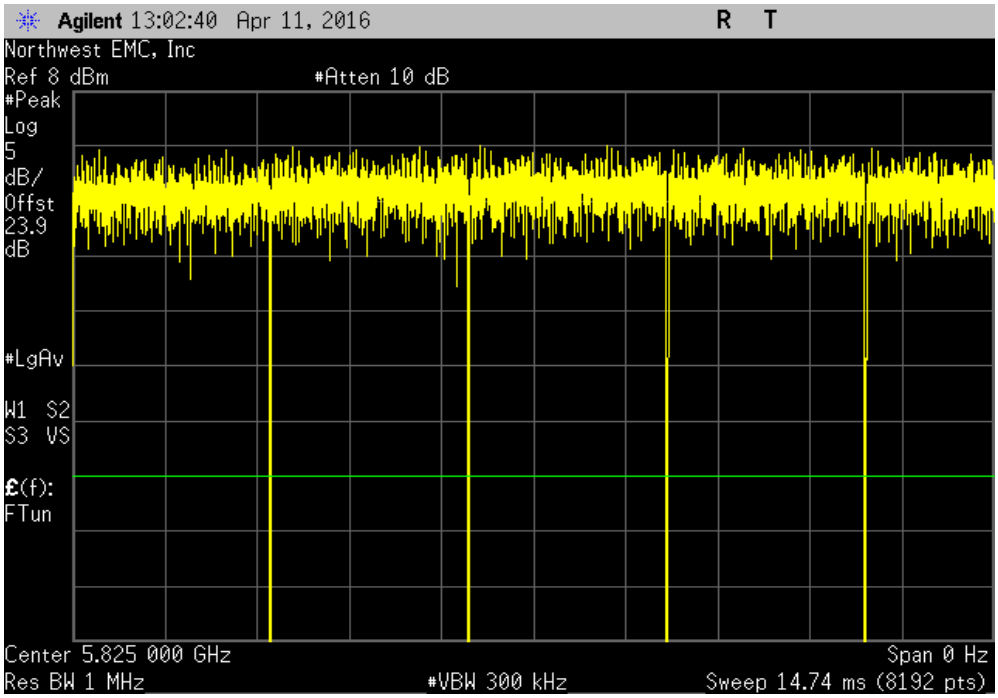
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	3.142 ms	3.175 ms	1	98.9	N/A	N/A



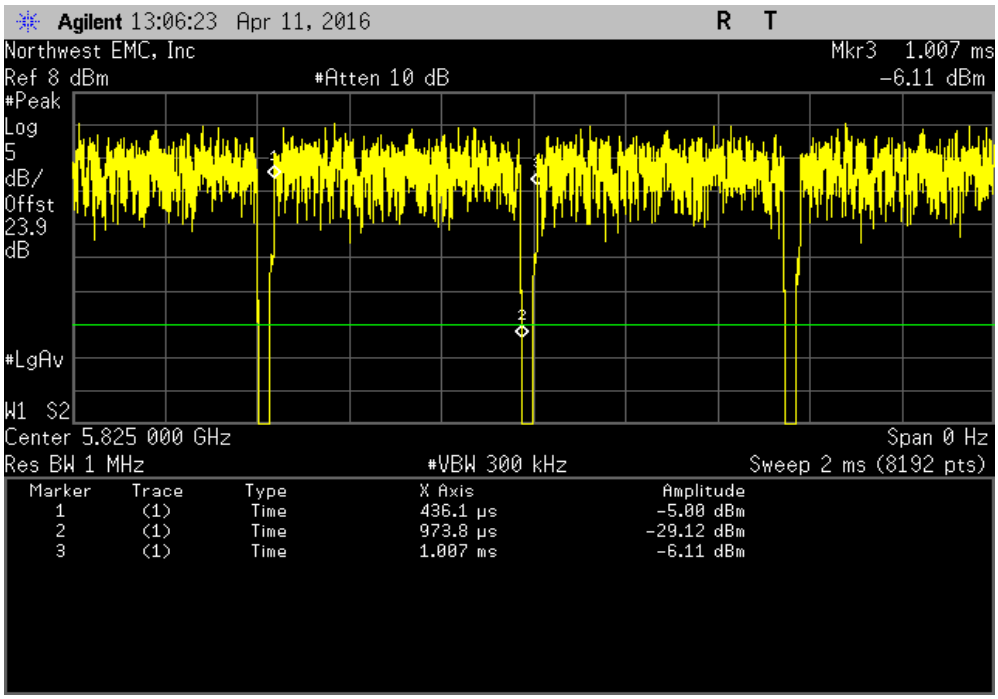
SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



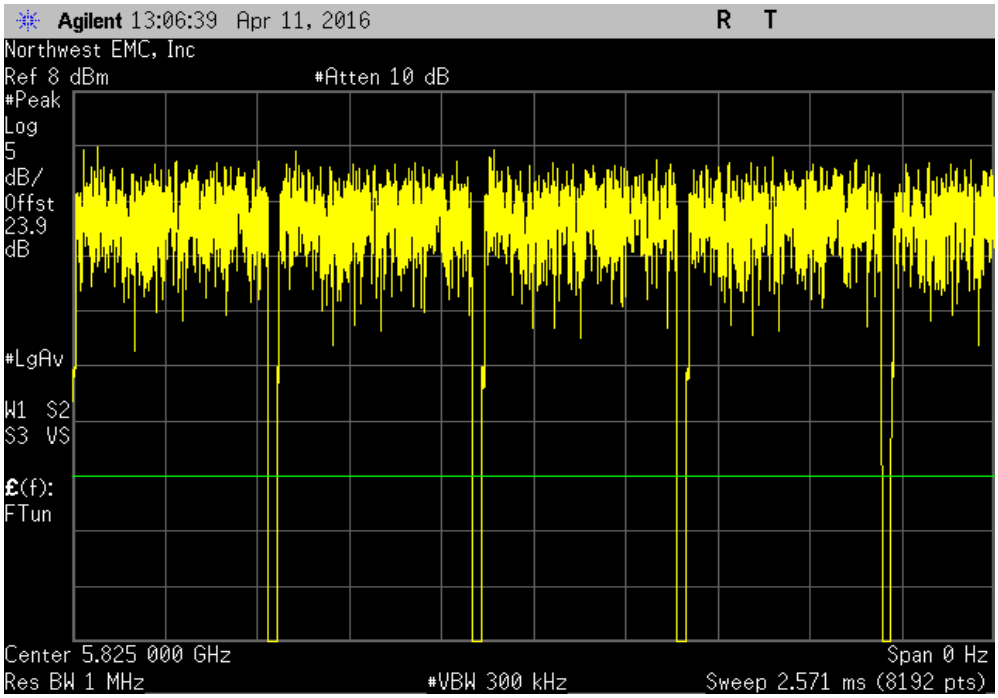
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	537.7 us	571.3 us	1	94.1	N/A	N/A



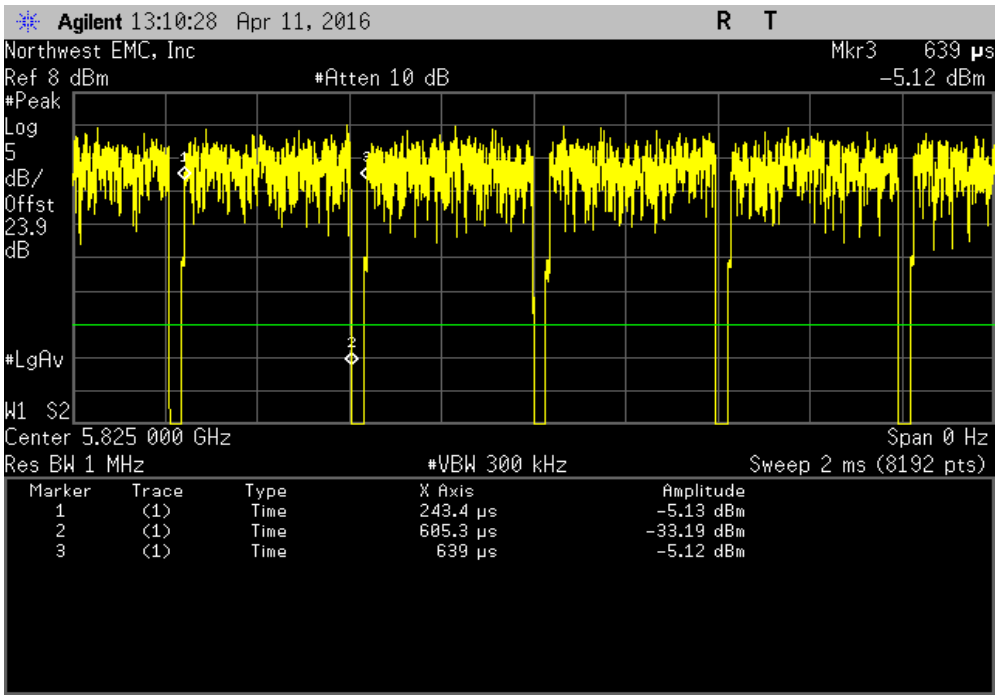
SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



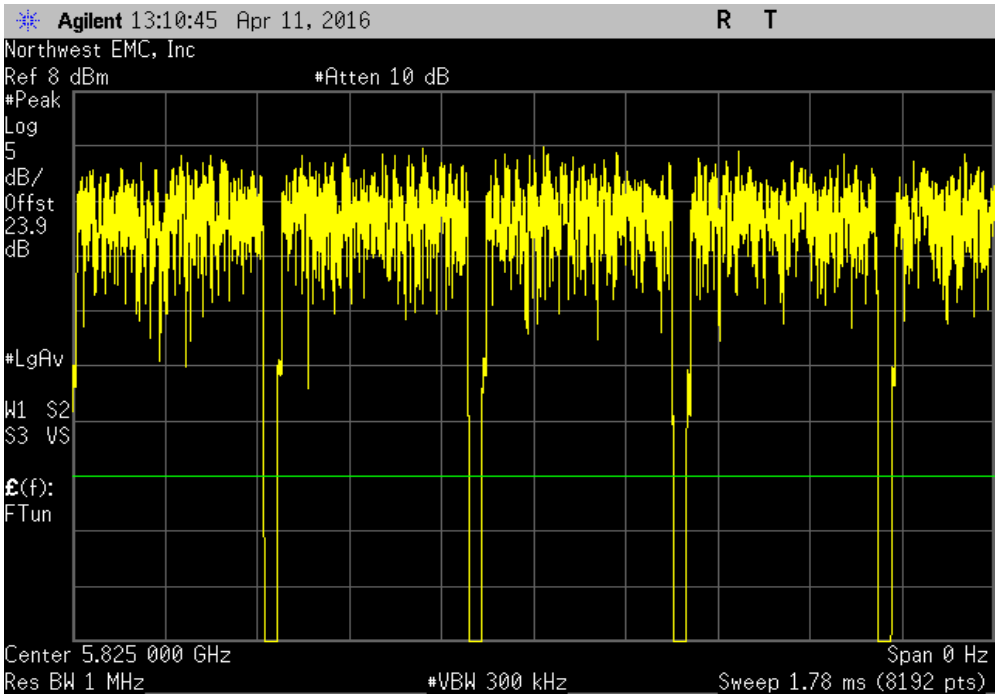
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	361.9 us	395.6 us	1	91.5	N/A	N/A



SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

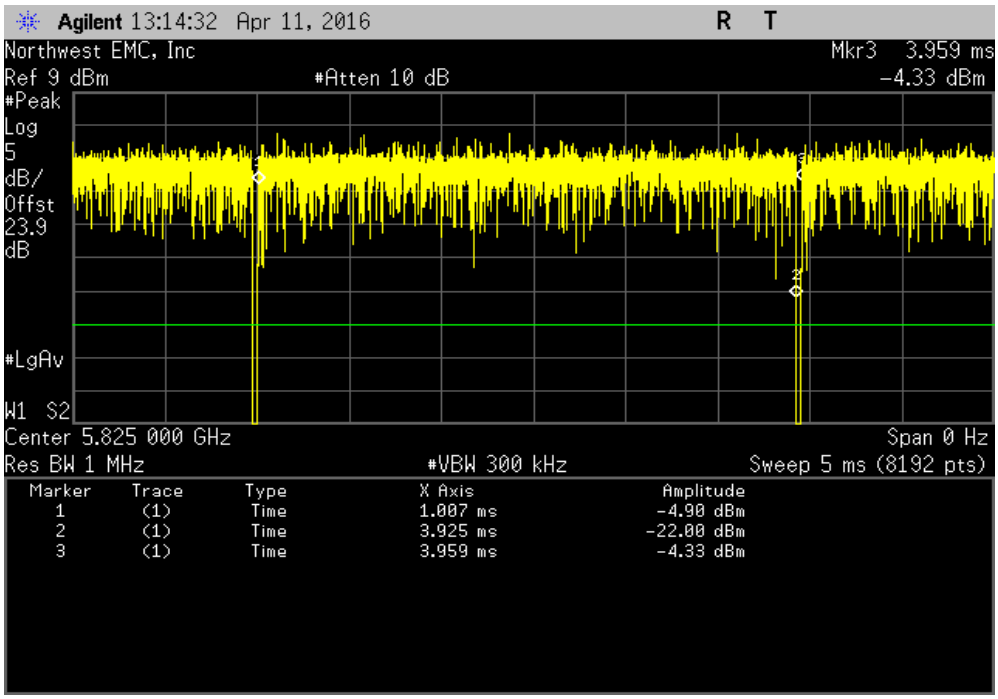


DUTY CYCLE

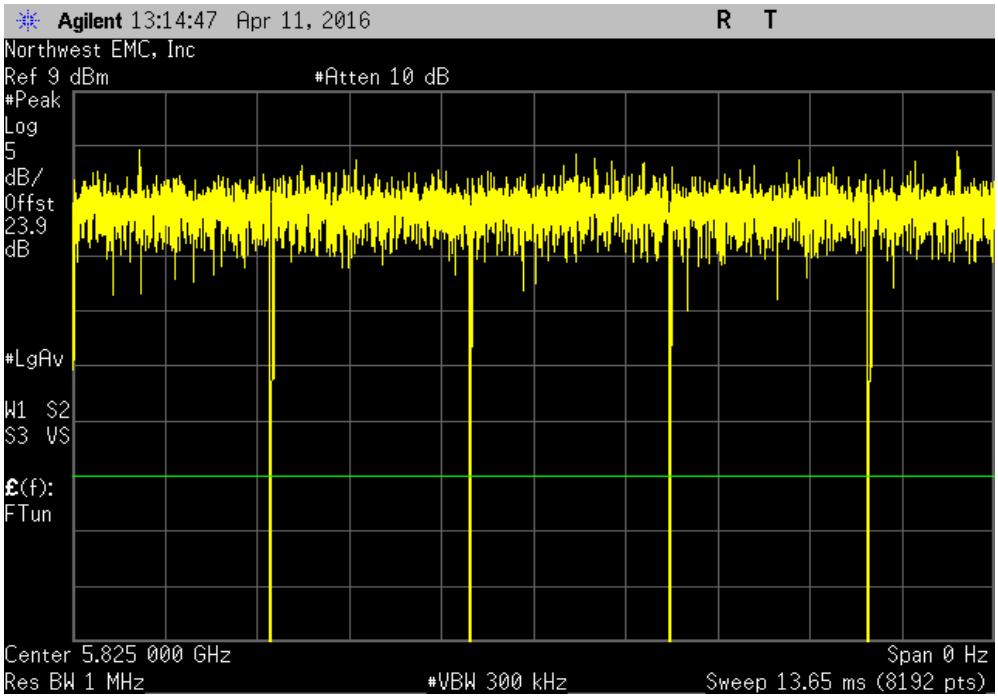
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.918 ms	2.951 ms	1	98.9	N/A	N/A



SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

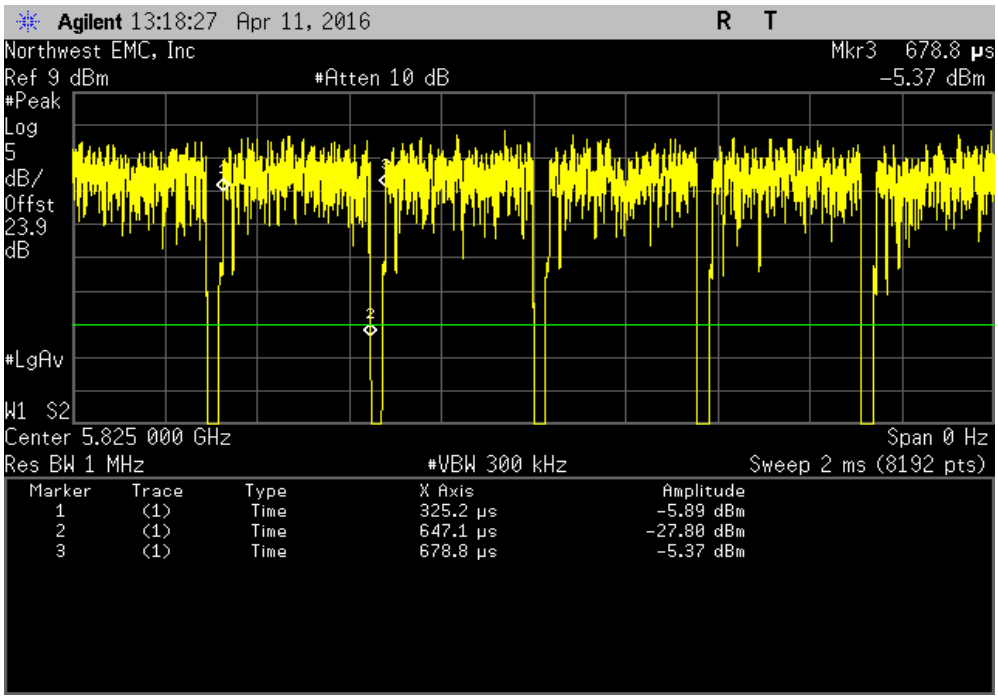


DUTY CYCLE

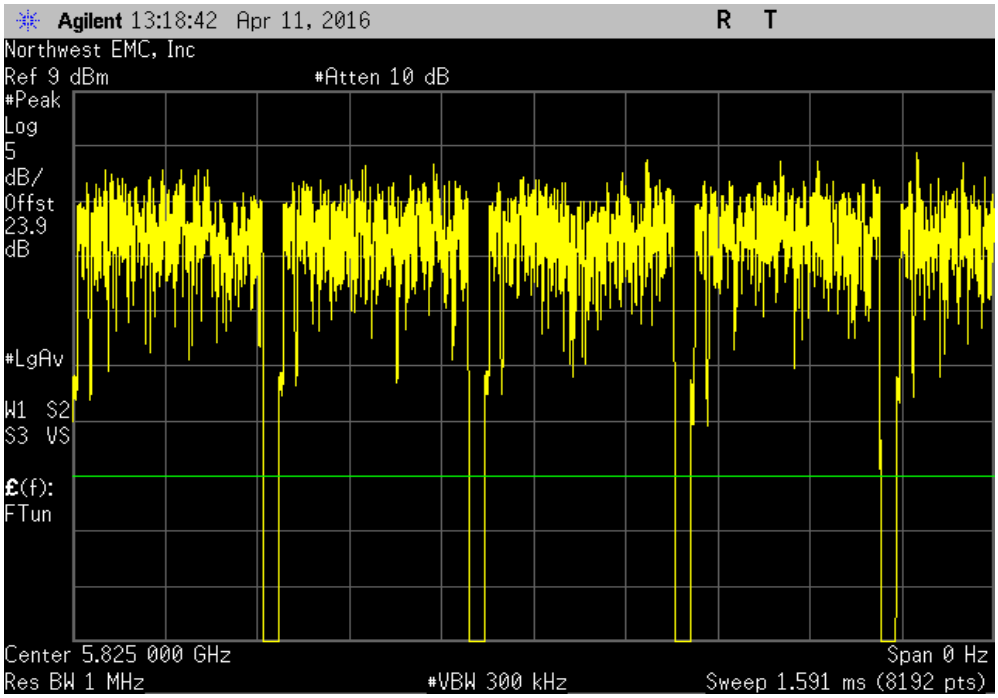
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	321.9 us	353.6 us	1	91	N/A	N/A



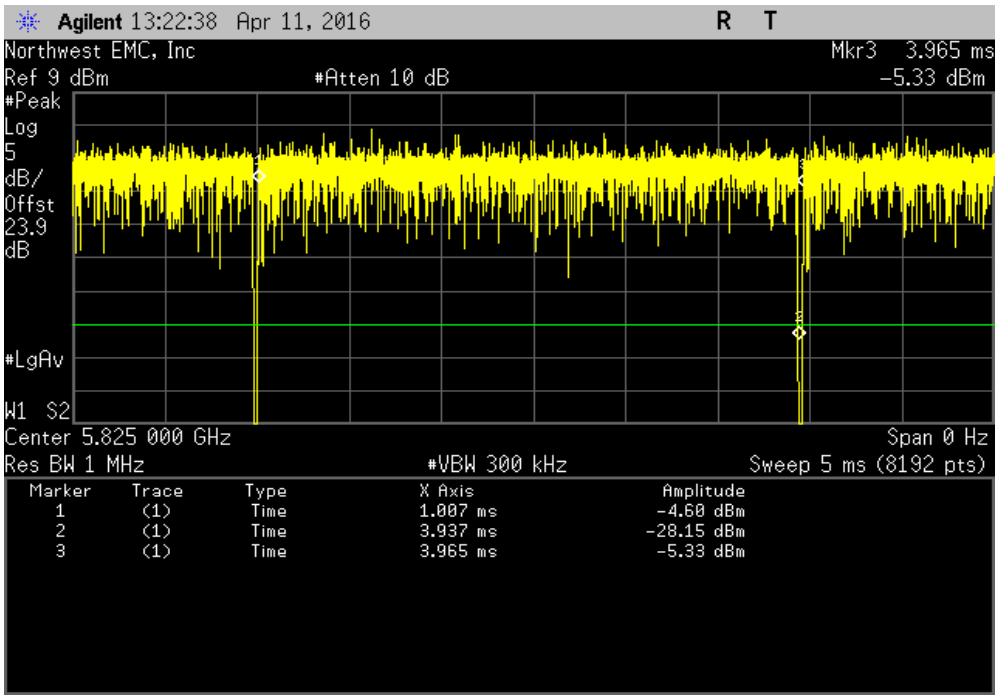
SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



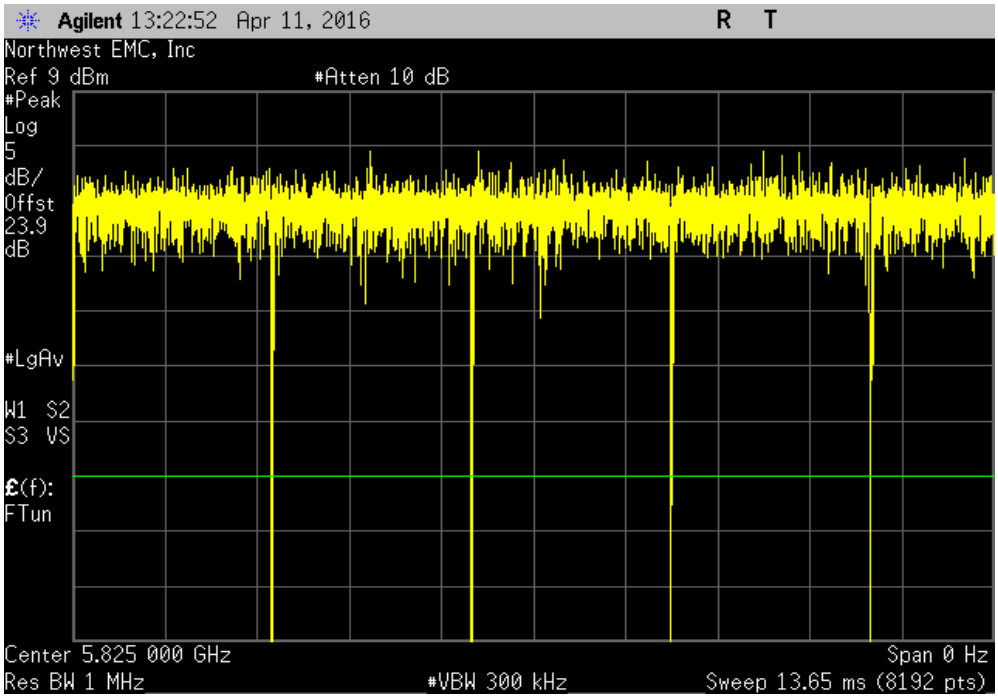
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.93 ms	2.958 ms	1	99.1	N/A	N/A



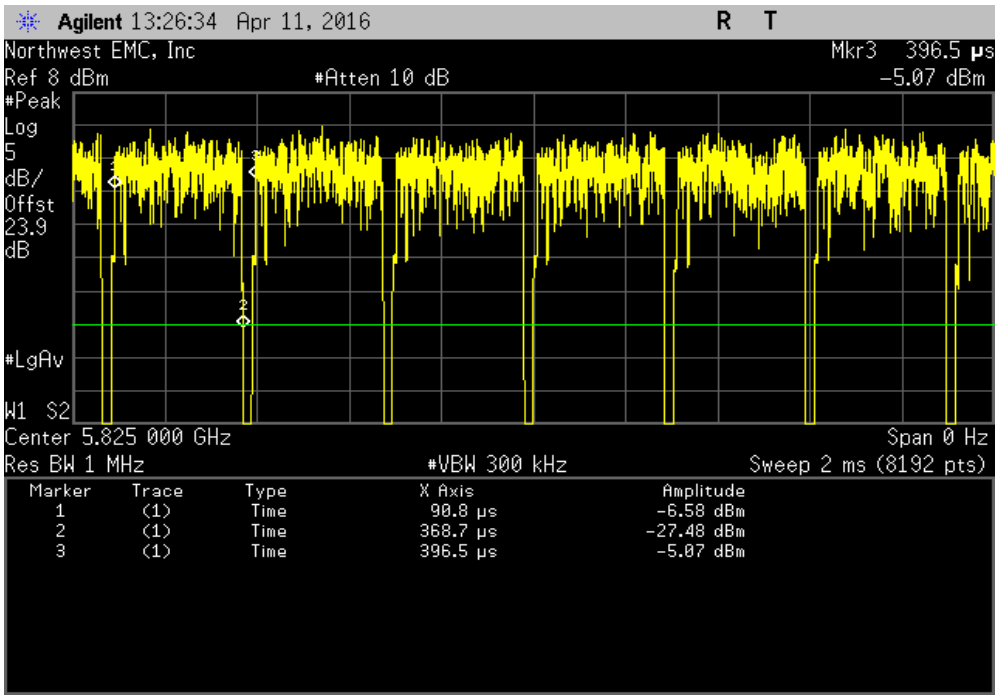
SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



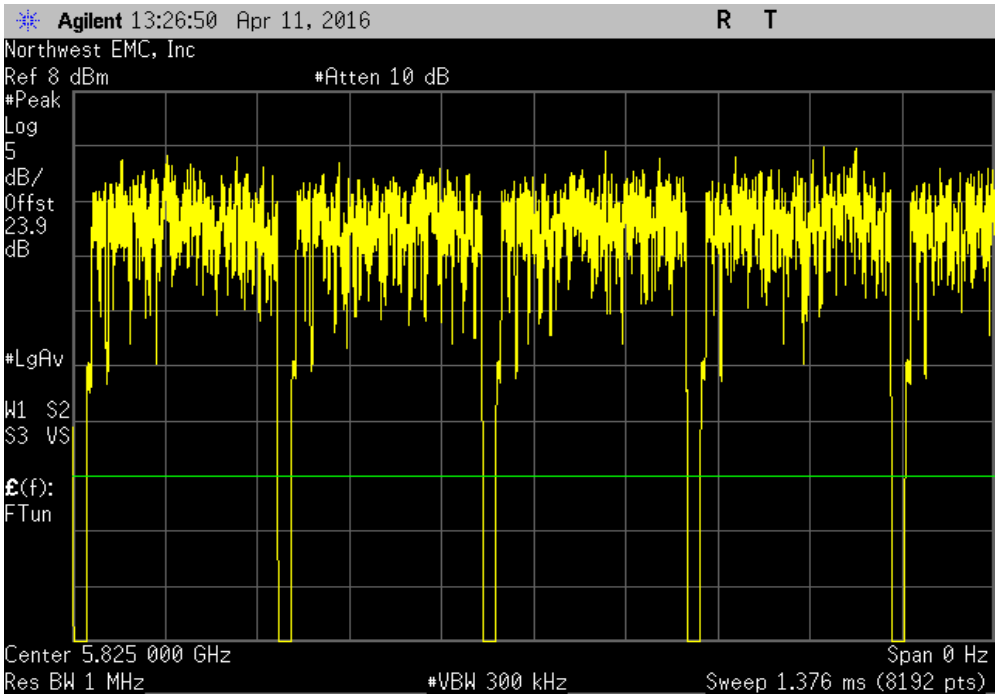
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	277.9 us	305.7 us	1	90.9	N/A	N/A



SISO, Chain A, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A

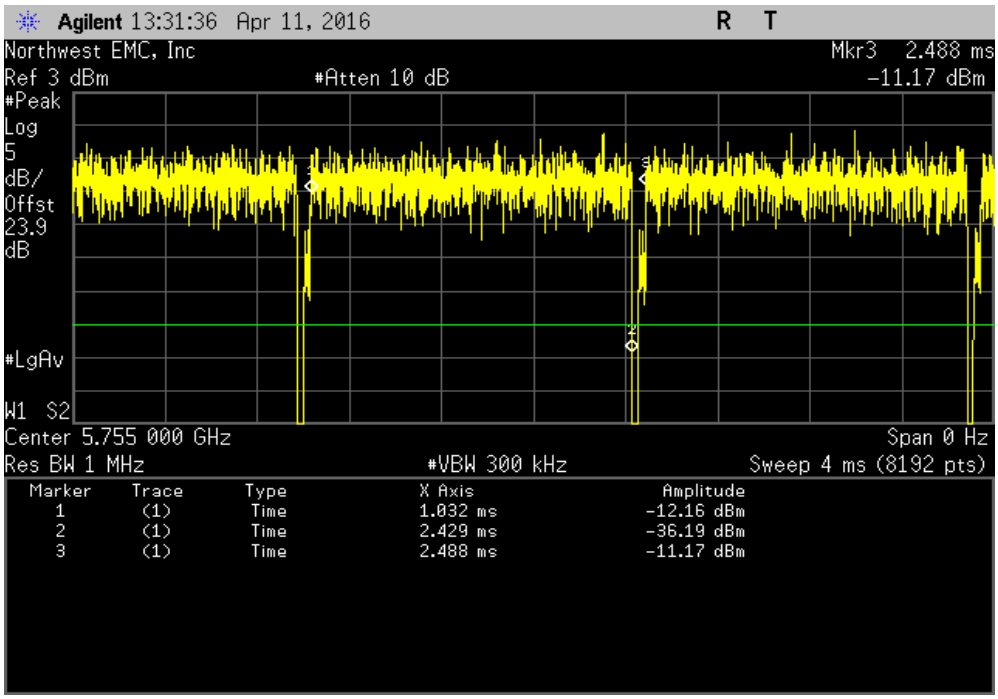


DUTY CYCLE

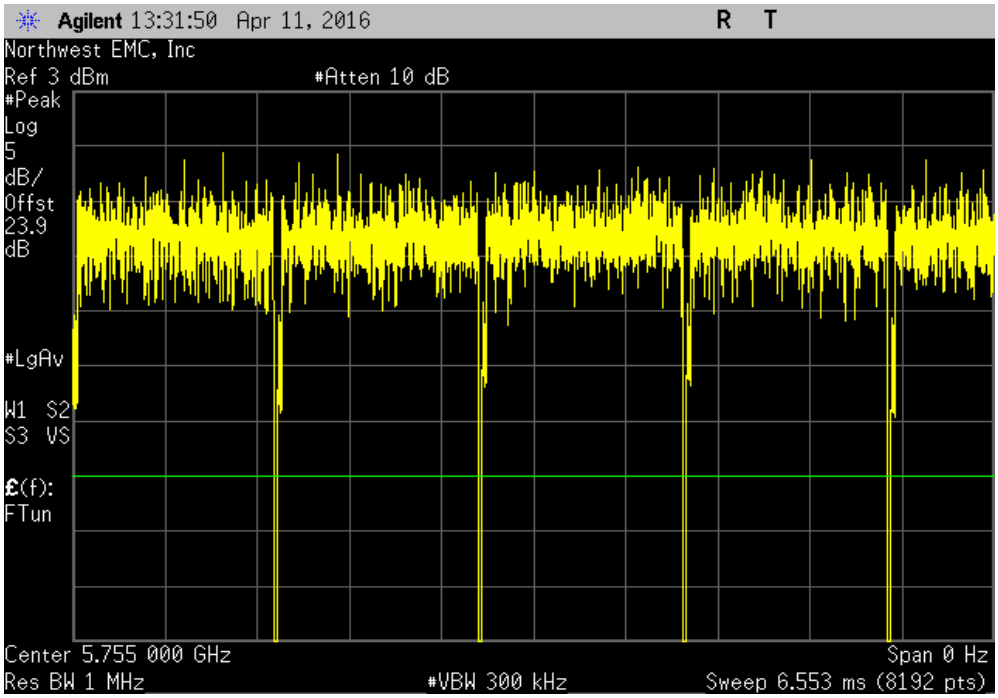
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.397 ms	1.456 ms	1	95.9	N/A	N/A



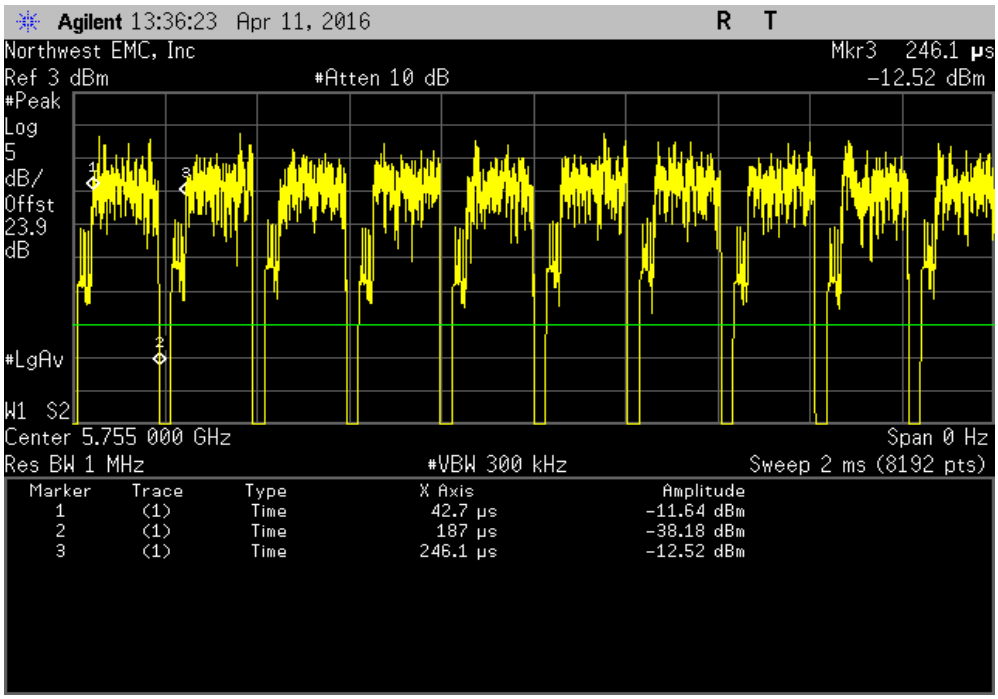
SISO, Chain A, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



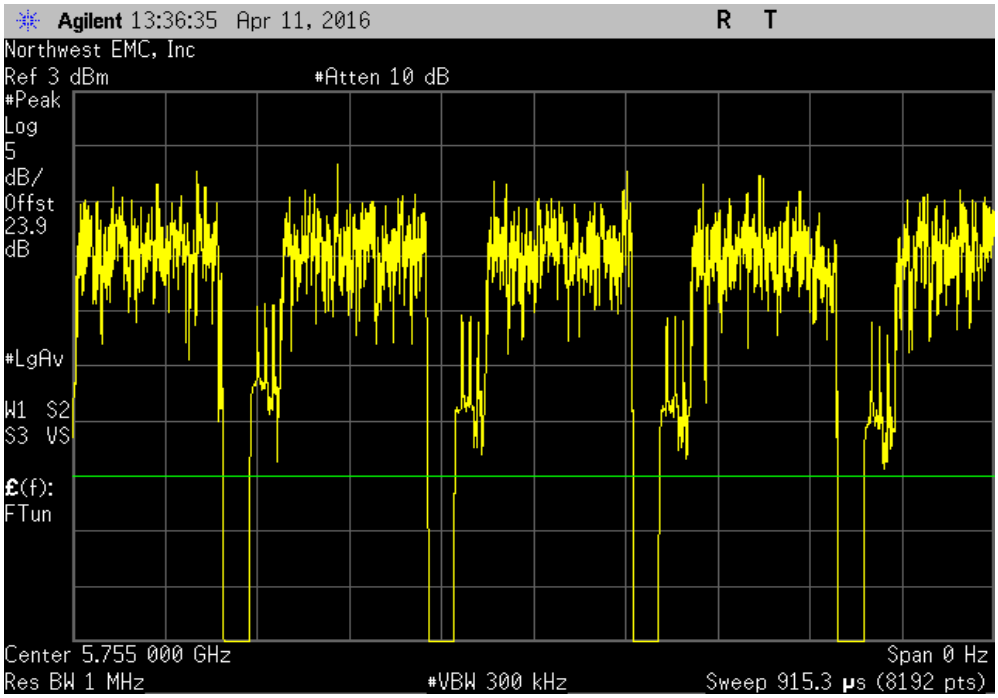
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	144.3 us	203.4 us	1	70.9	N/A	N/A



SISO, Chain A, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

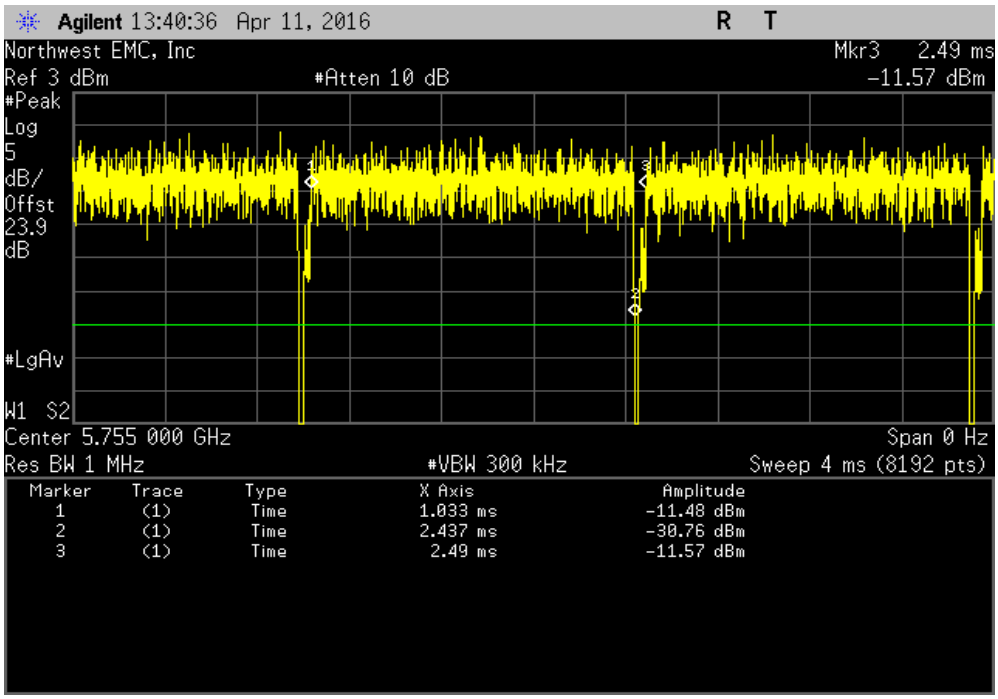


DUTY CYCLE

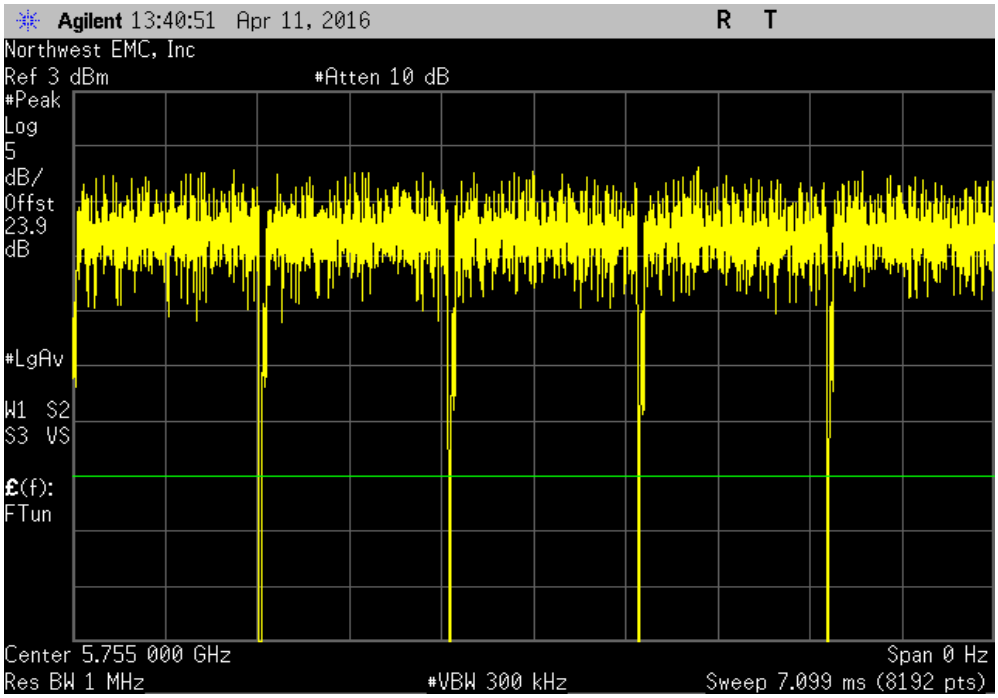
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.405 ms	1.458 ms	1	96.4	N/A	N/A

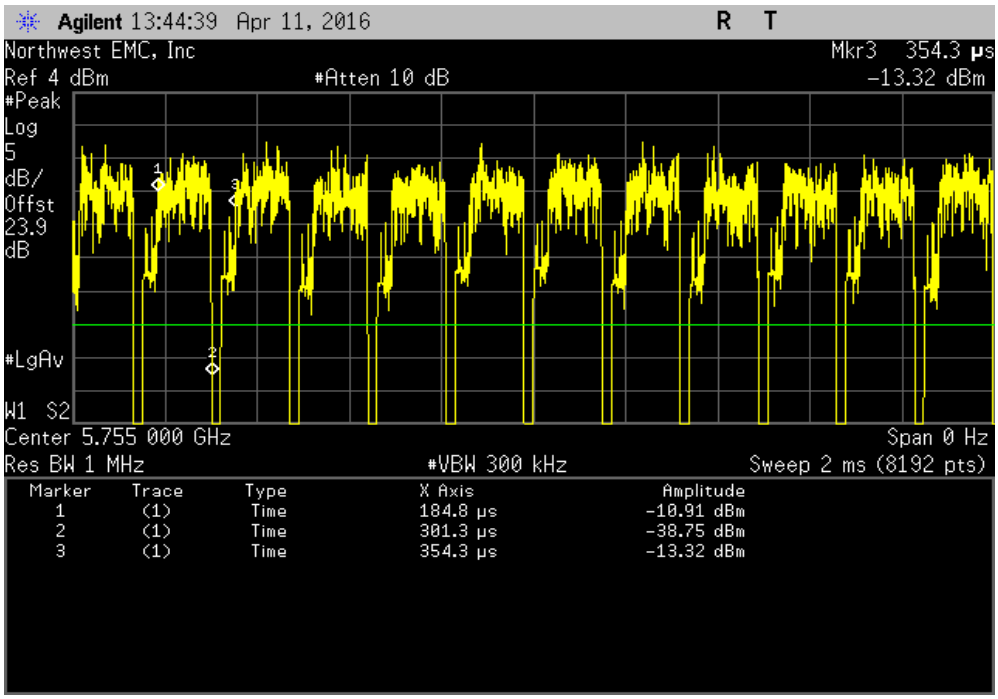


SISO, Chain A, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

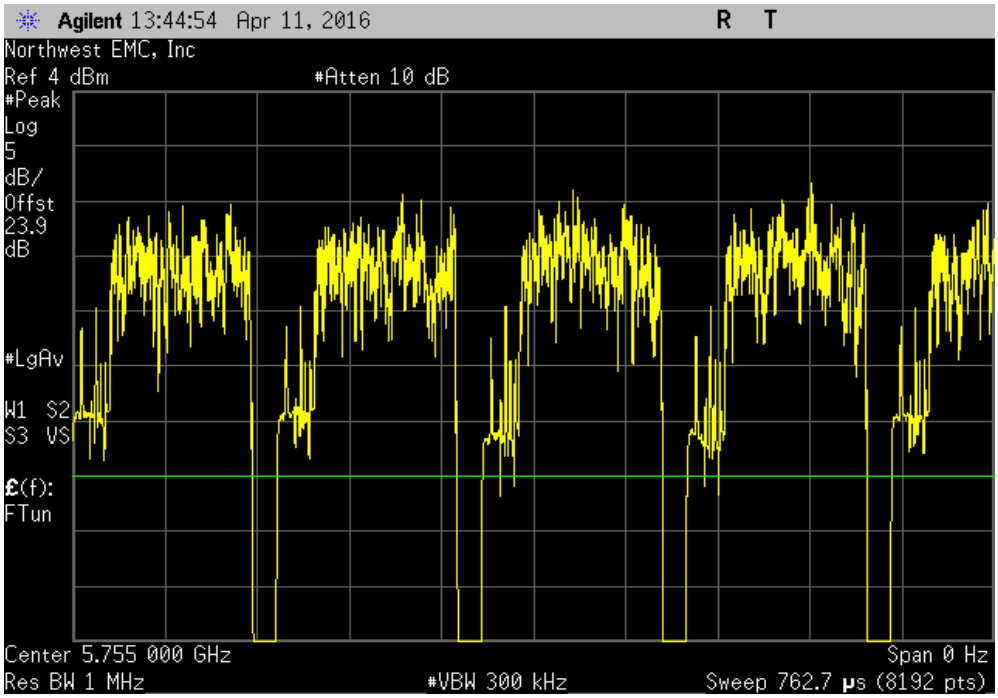


DUTY CYCLE

SISO, Chain A, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	116.5 us	169.5 us	1	68.7	N/A	N/A



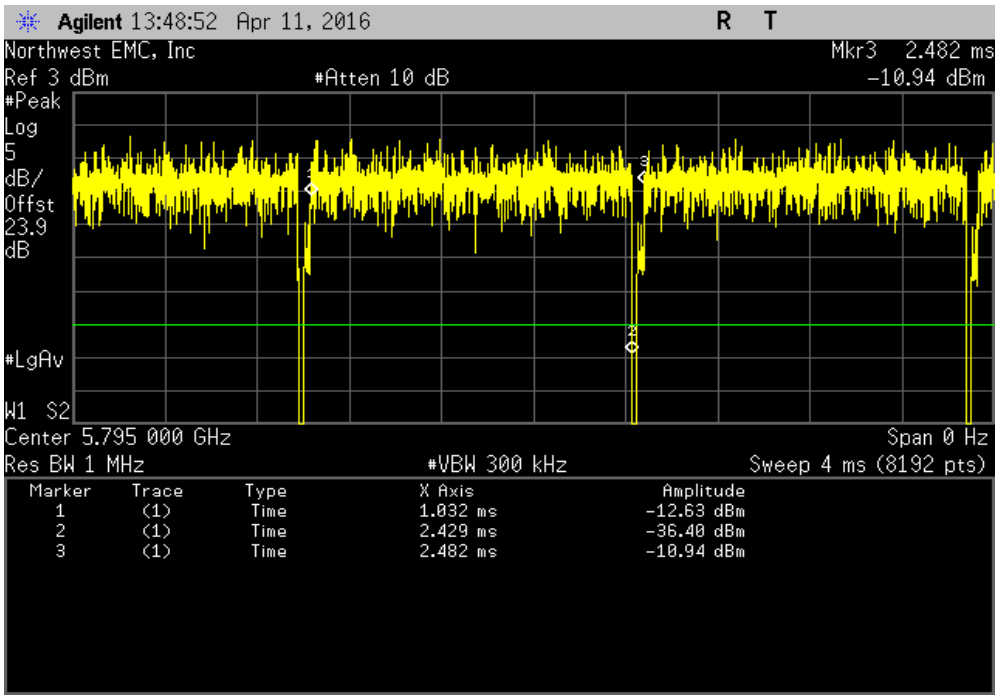
SISO, Chain A, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



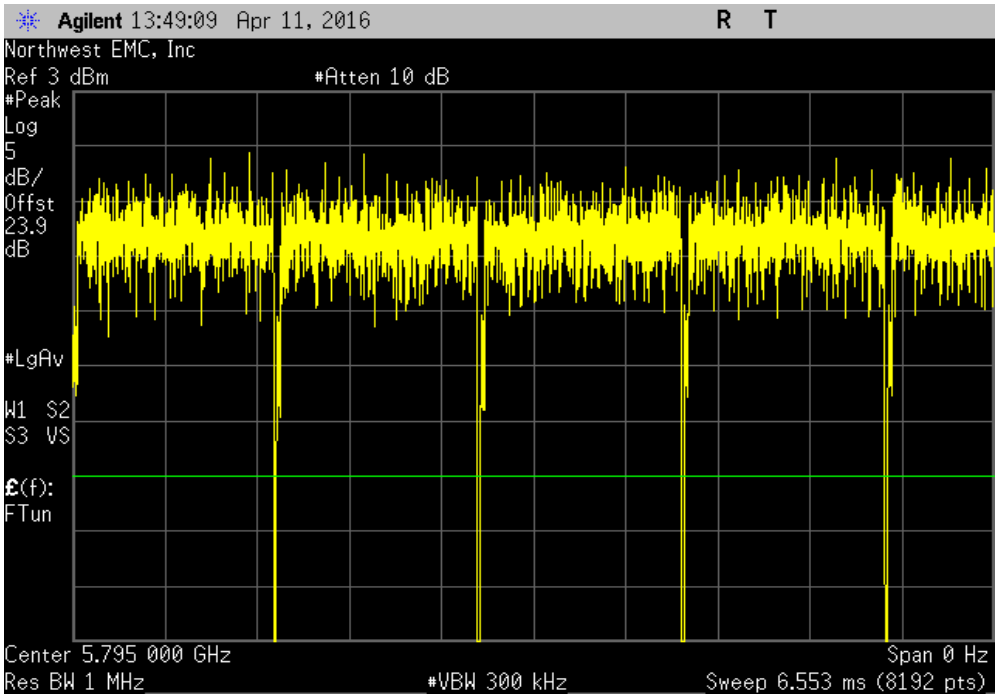
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.397 ms	1.45 ms	1	96.3	N/A	N/A

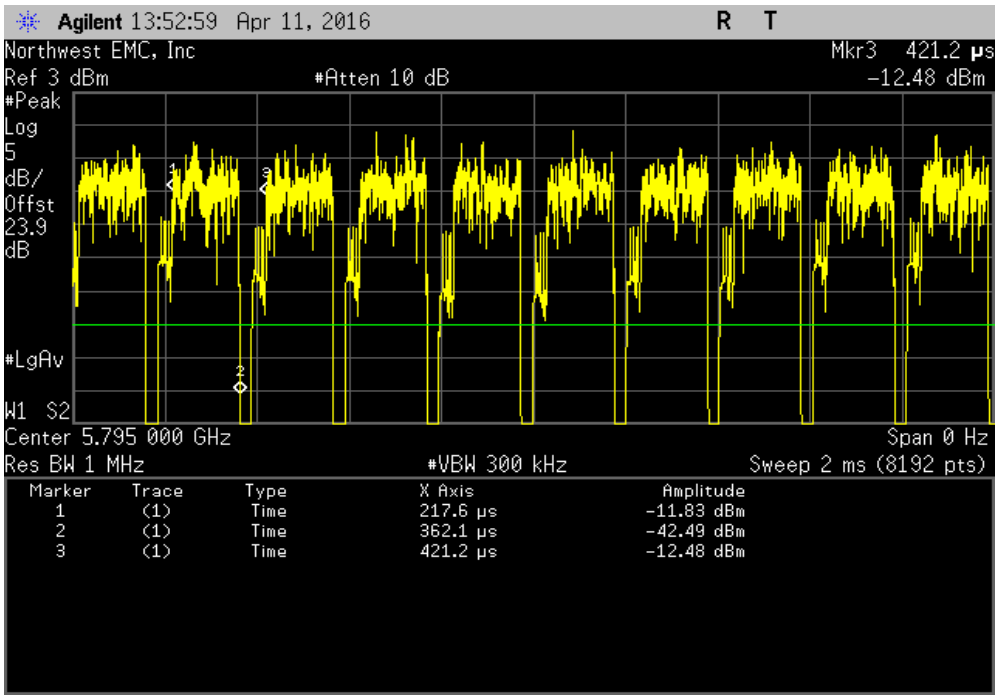


SISO, Chain A, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

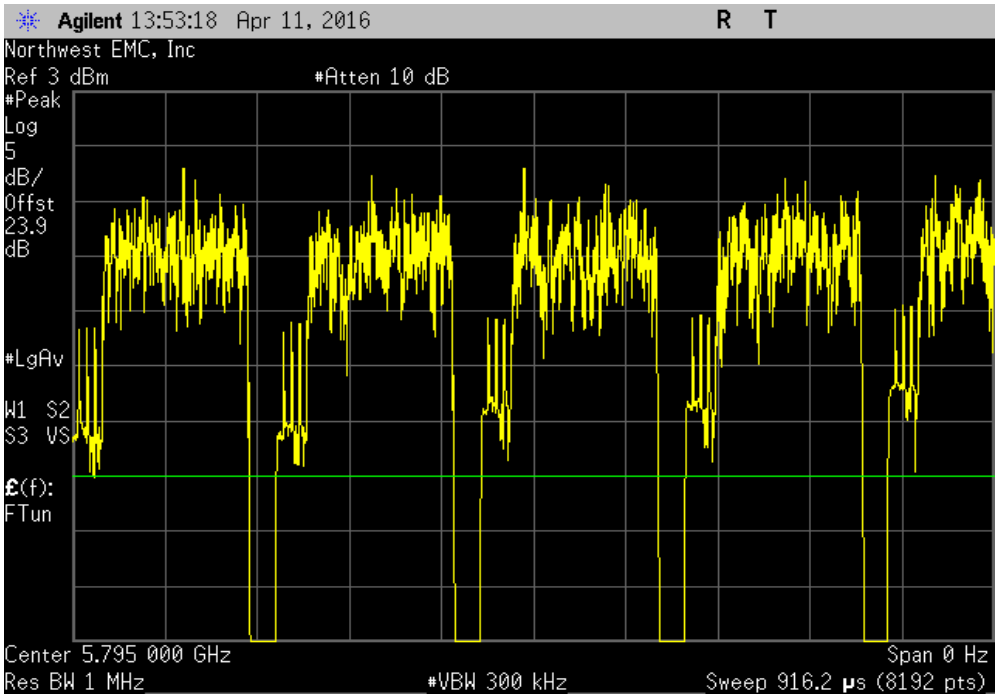


DUTY CYCLE

SISO, Chain A, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	144.5 us	203.6 us	1	71	N/A	N/A



SISO, Chain A, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A

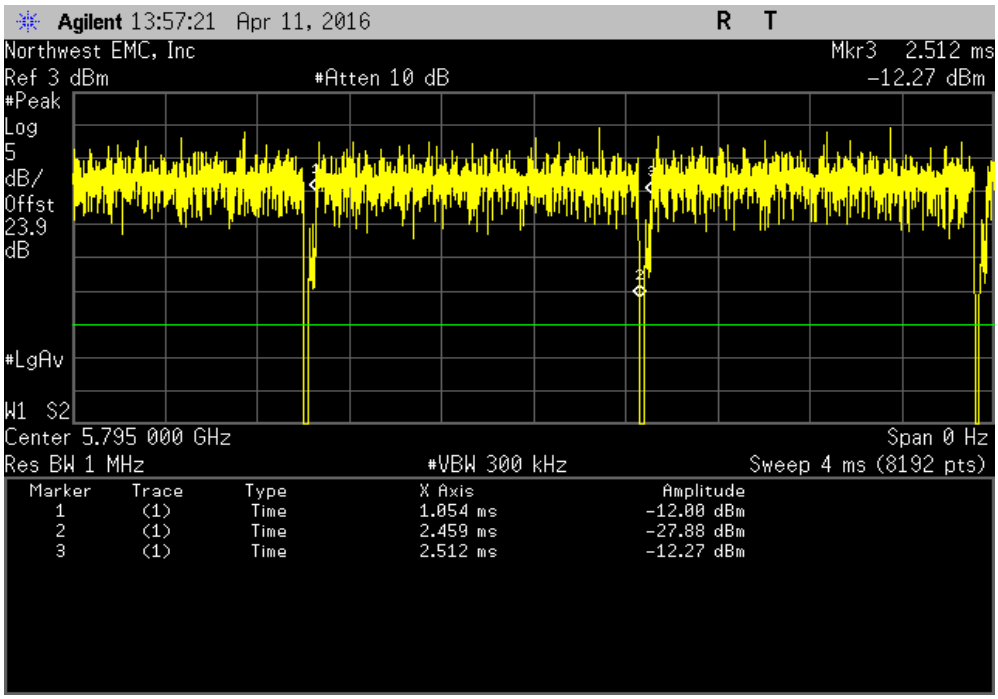


DUTY CYCLE

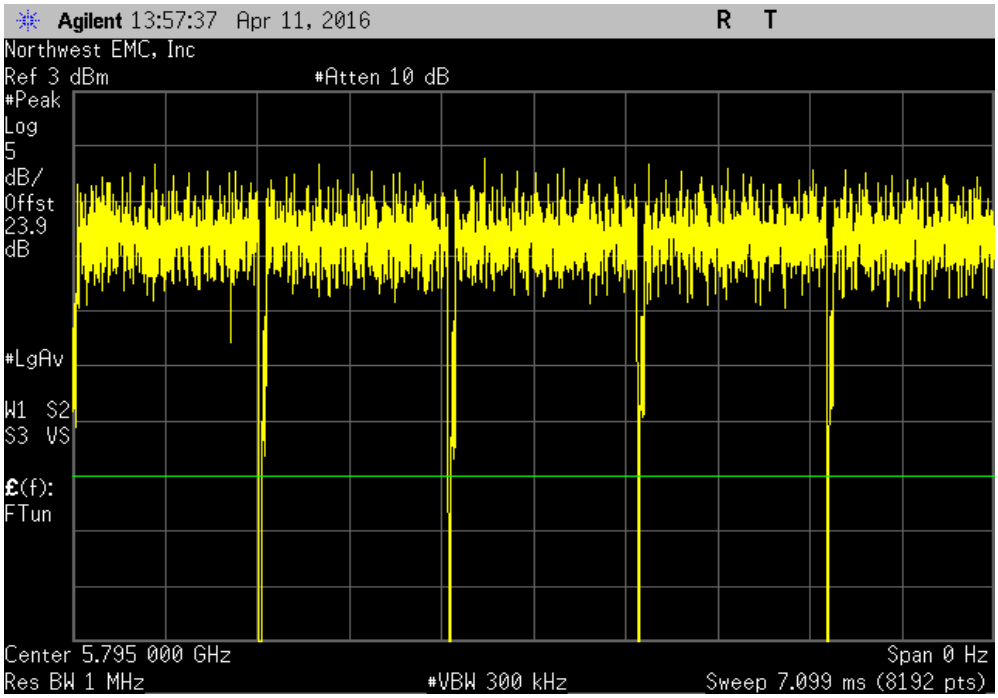
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.405 ms	1.458 ms	1	96.4	N/A	N/A



SISO, Chain A, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

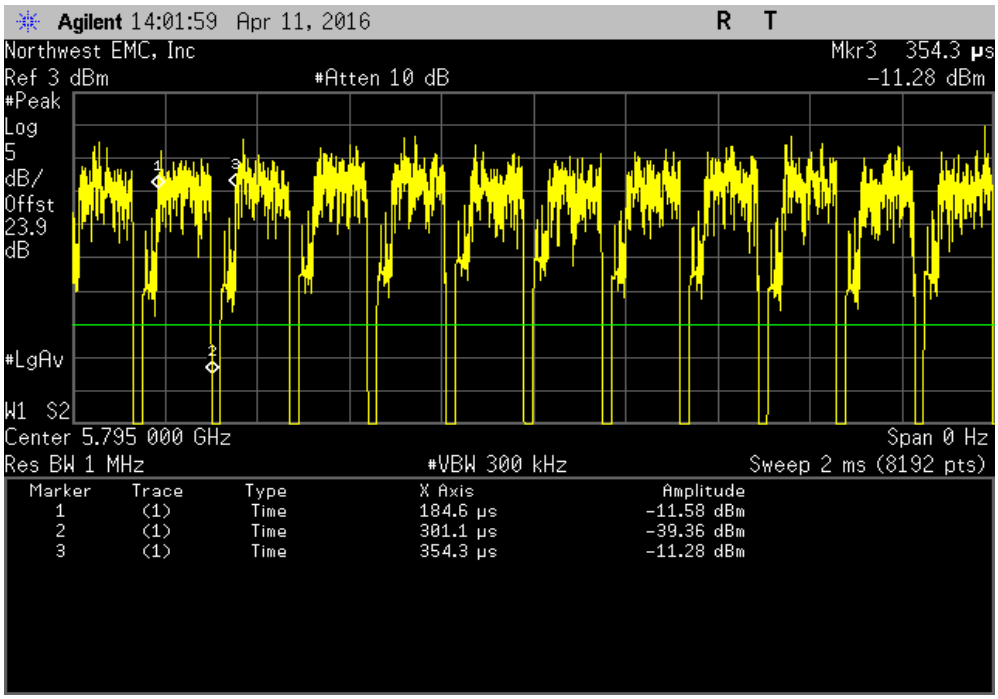


DUTY CYCLE

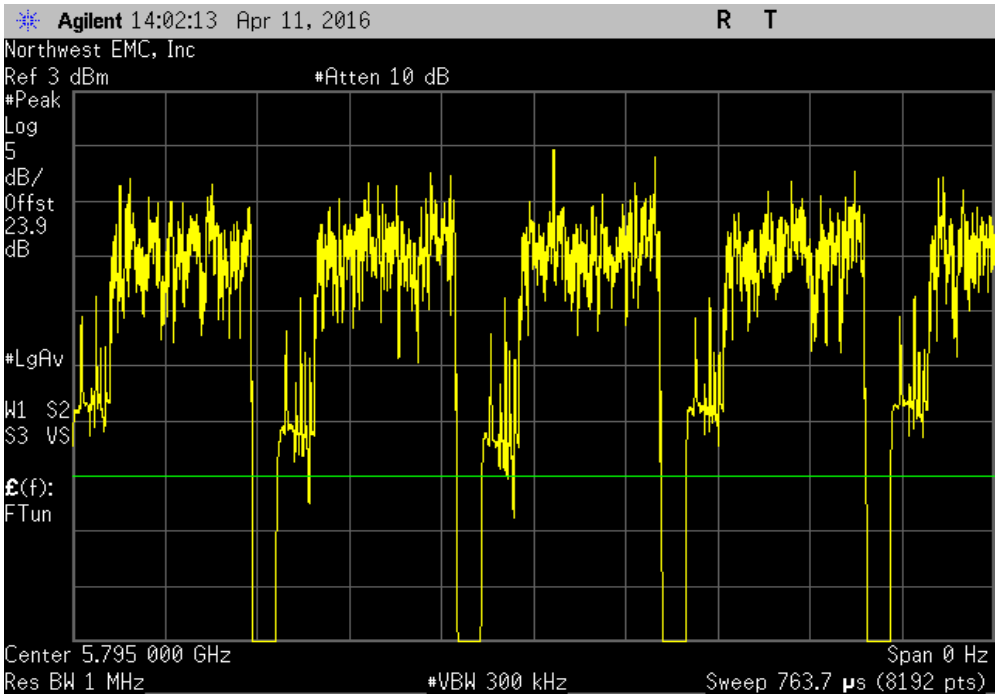
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	116.5 us	169.7 us	1	68.7	N/A	N/A



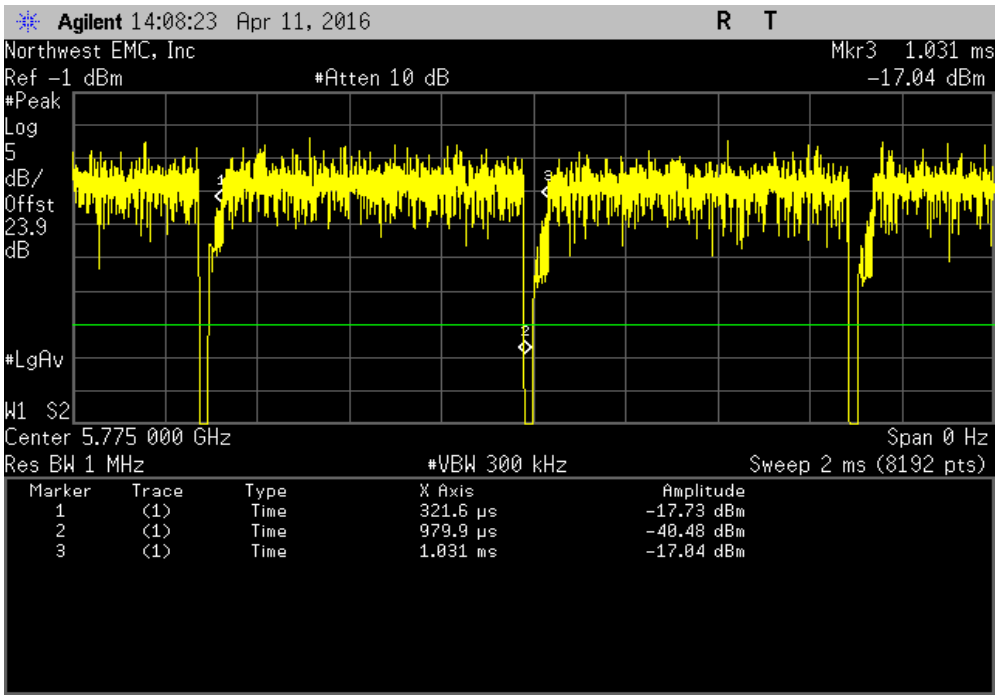
SISO, Chain A, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



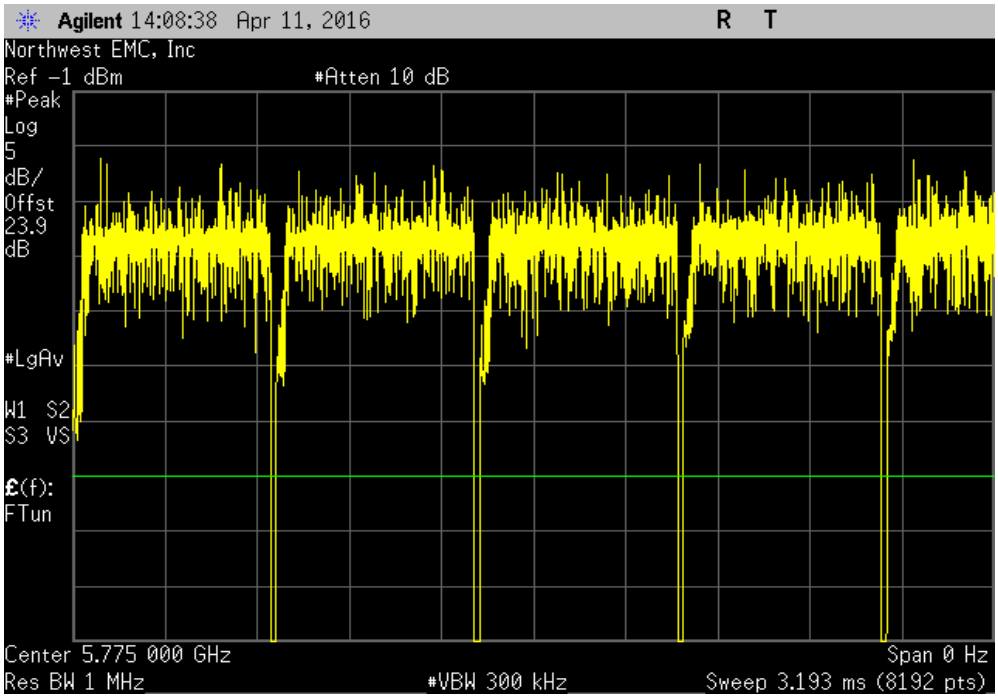
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain A, 80MHz BW, Mid Channel, Ch 149/161 - 5775 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	658.3 us	709.5 us	1	92.8	N/A	N/A



SISO, Chain A, 80MHz BW, Mid Channel, Ch 149/161 - 5775 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

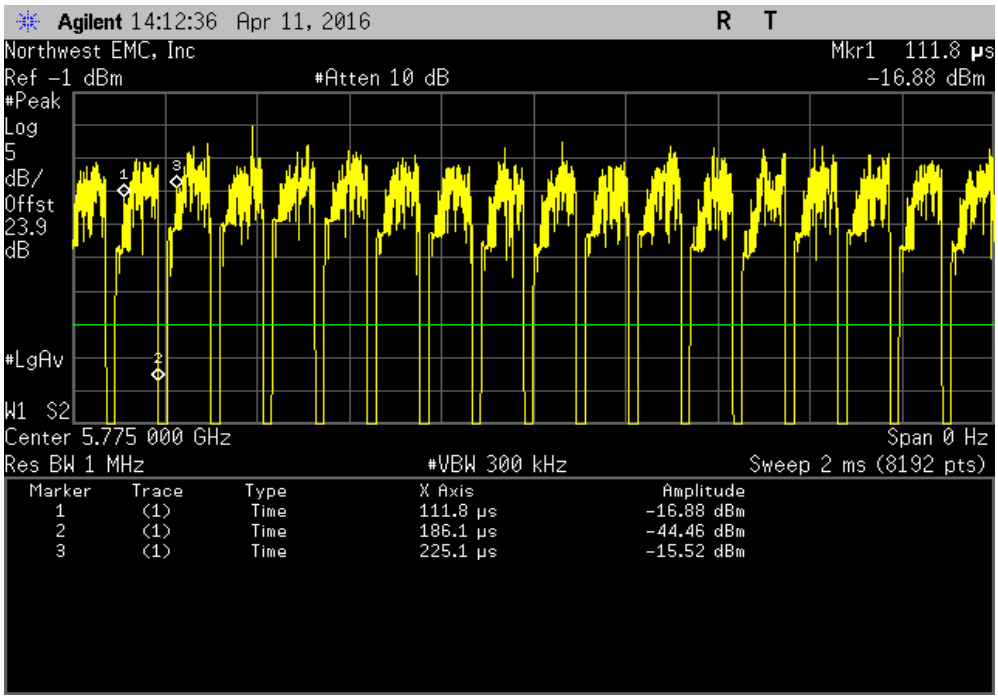


DUTY CYCLE

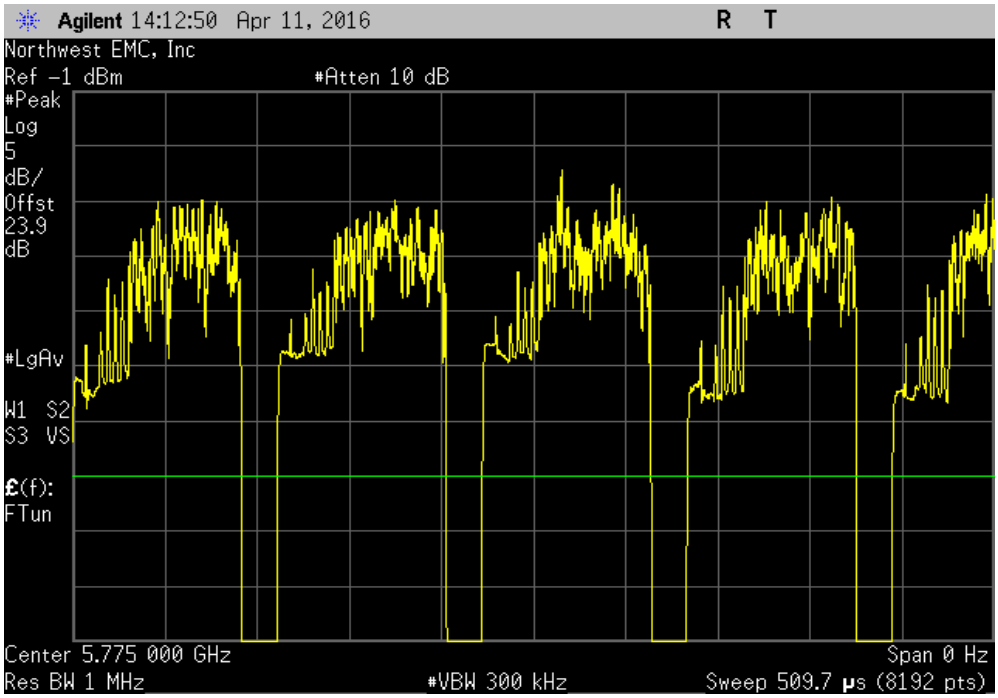
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain A, 80MHz BW, Mid Channel, Ch 149/161 - 5775 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	74.264 us	113.264 us	1	65.6	N/A	N/A



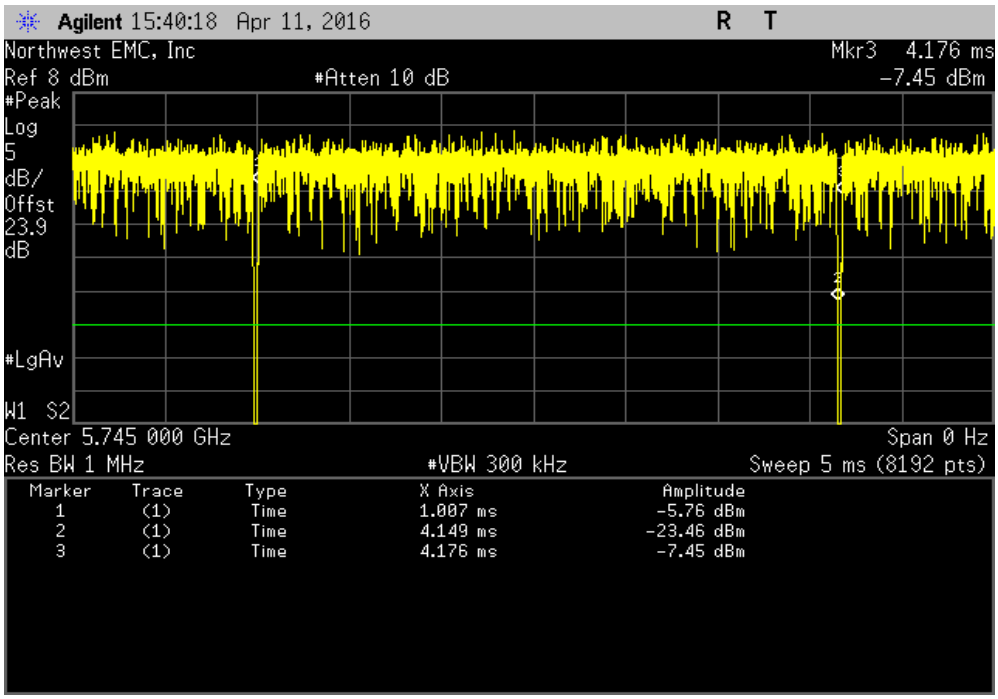
SISO, Chain A, 80MHz BW, Mid Channel, Ch 149/161 - 5775 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



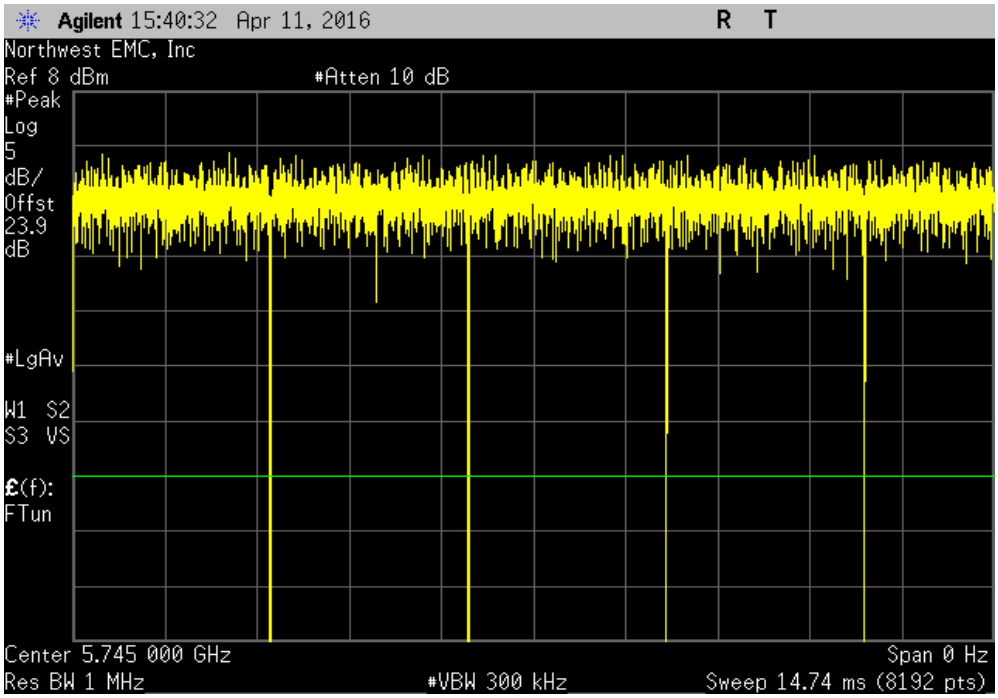
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	3.142 ms	3.169 ms	1	99.1	N/A	N/A



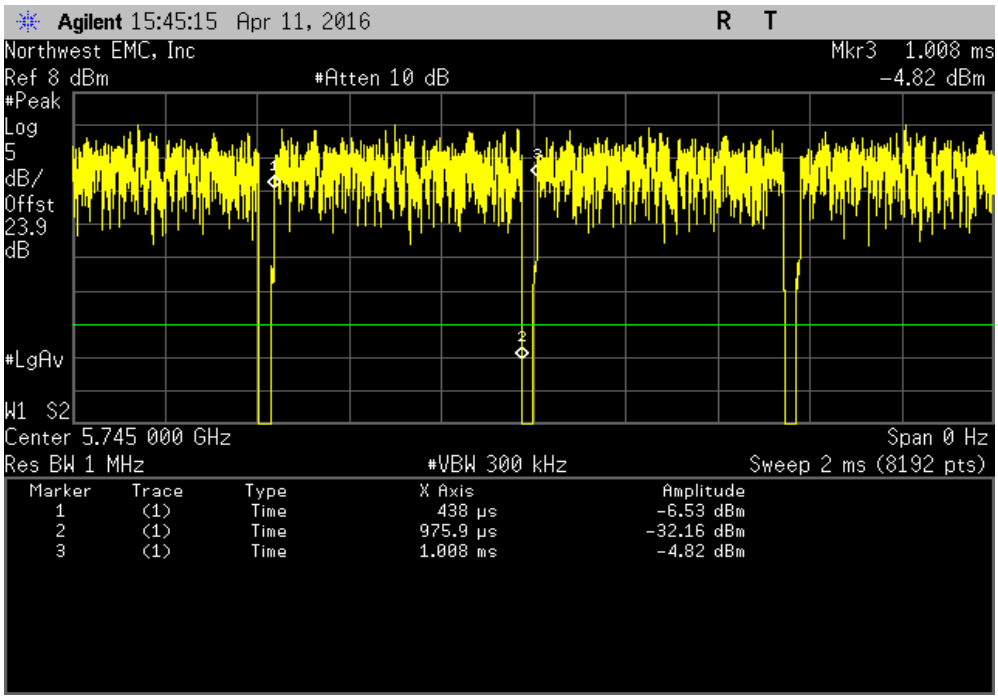
SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



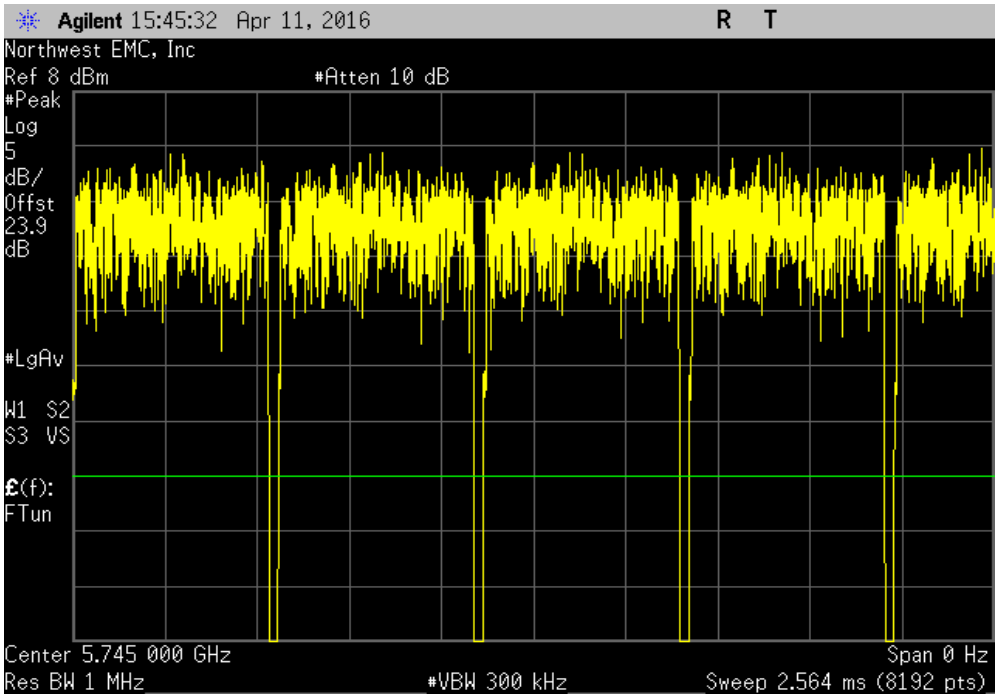
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	537.9 us	569.7 us	1	94.4	N/A	N/A

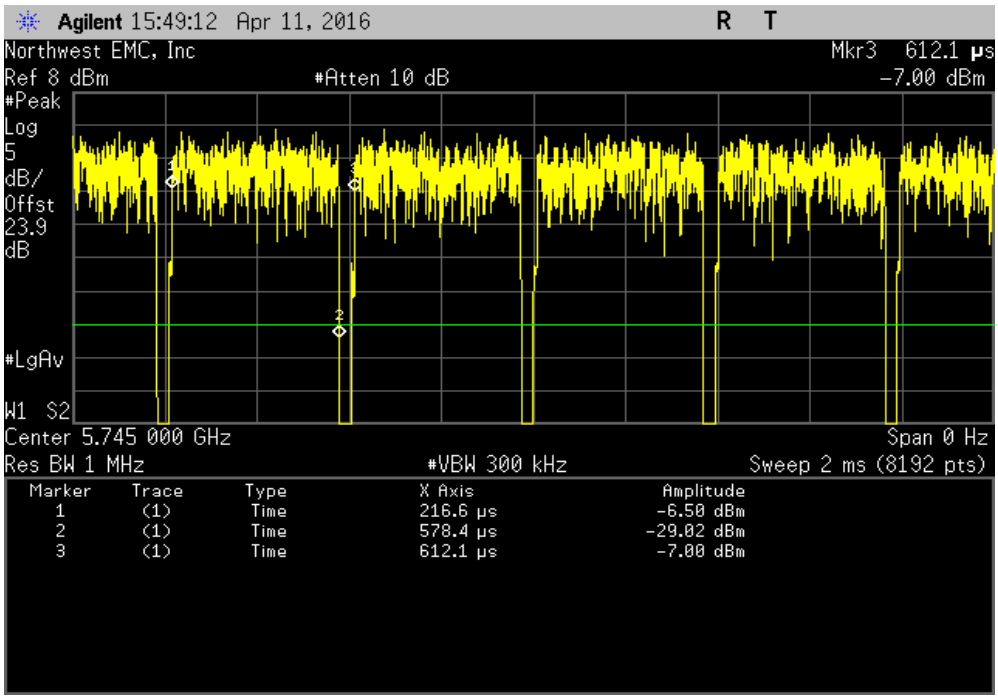


SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

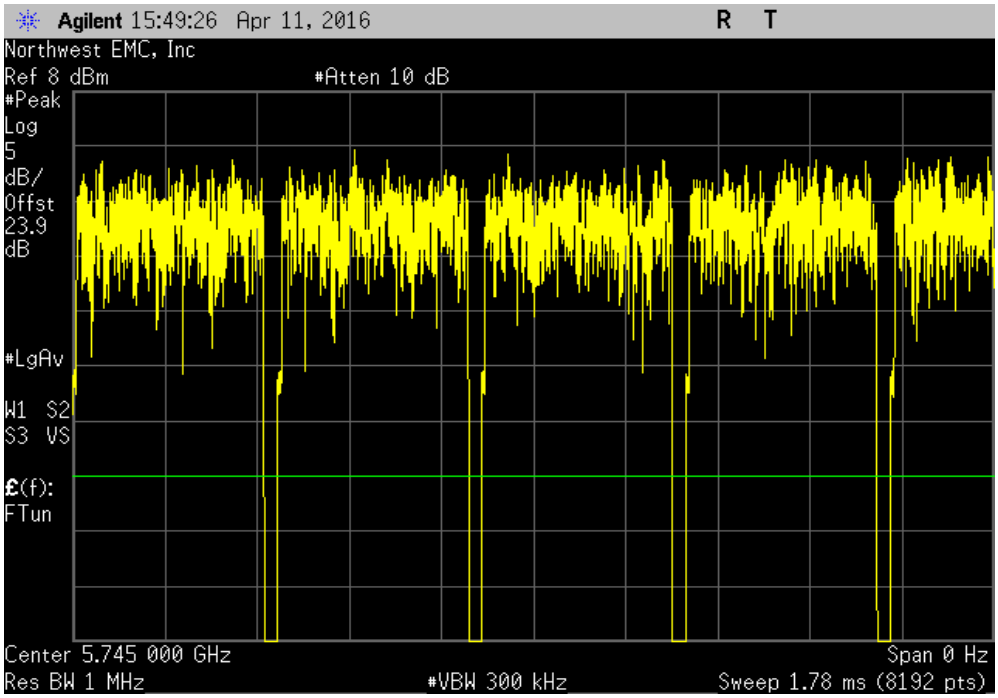


DUTY CYCLE

SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	361.8 us	395.5 us	1	91.5	N/A	N/A



SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

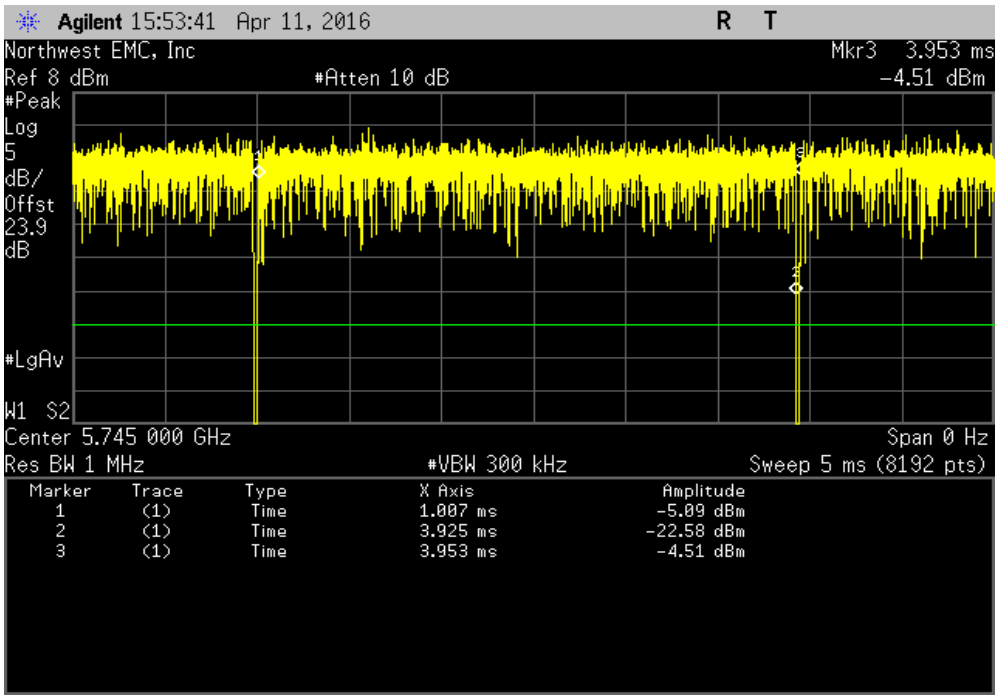


DUTY CYCLE

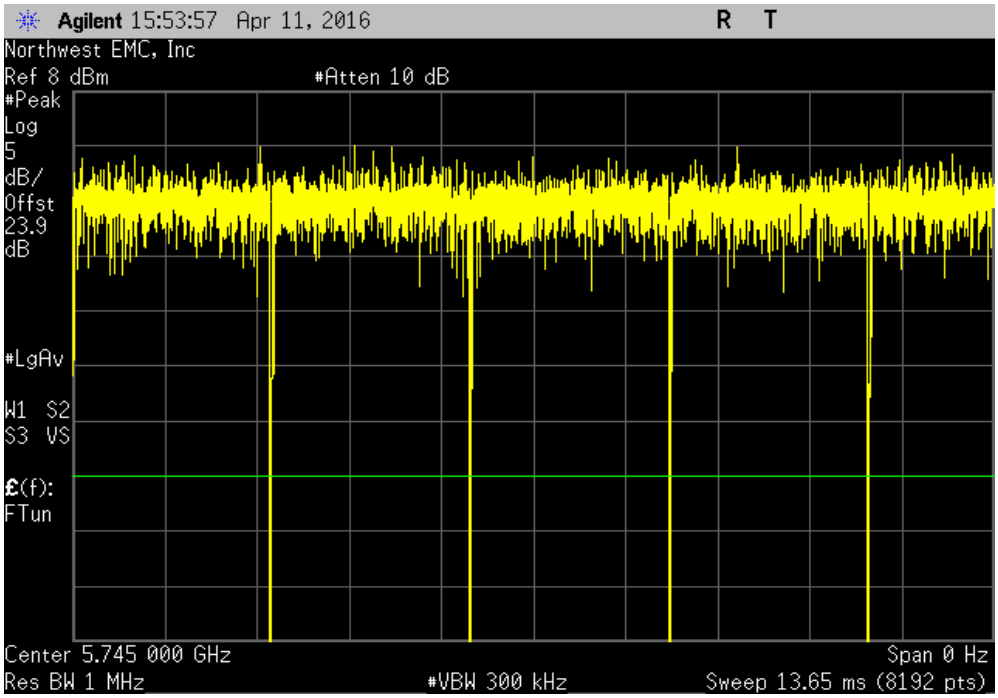
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.918 ms	2.946 ms	1	99	N/A	N/A

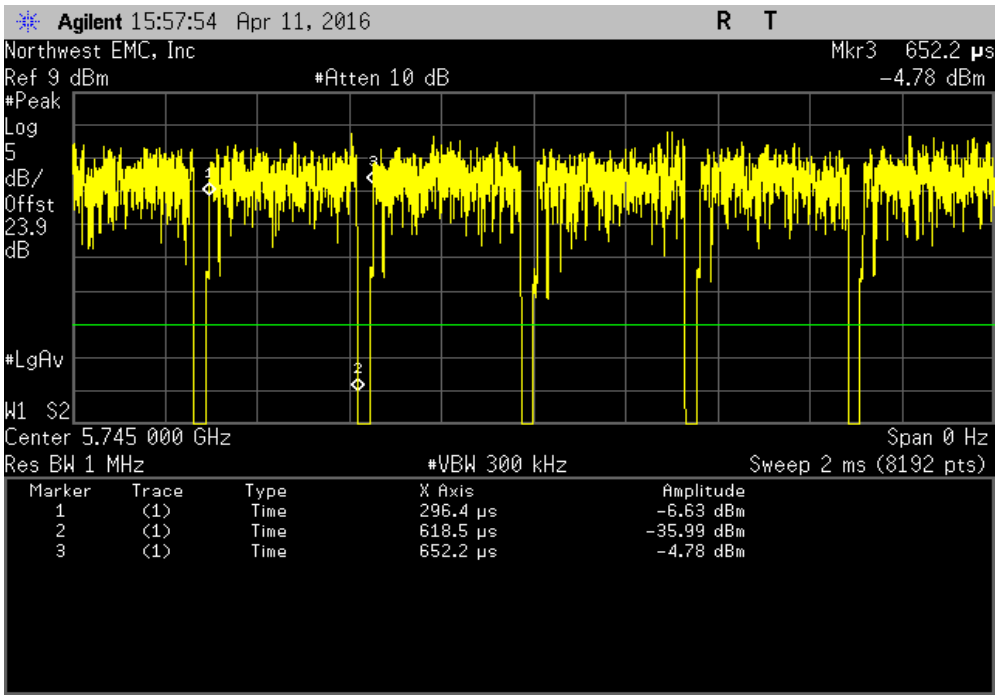


SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

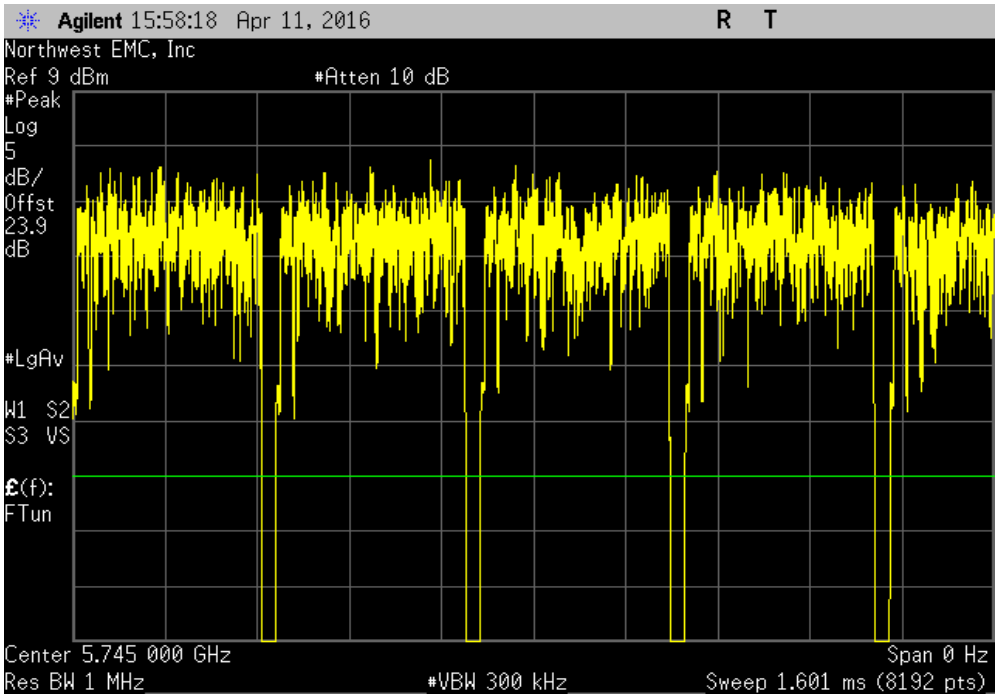


DUTY CYCLE

SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	322.1 us	355.8 us	1	90.5	N/A	N/A



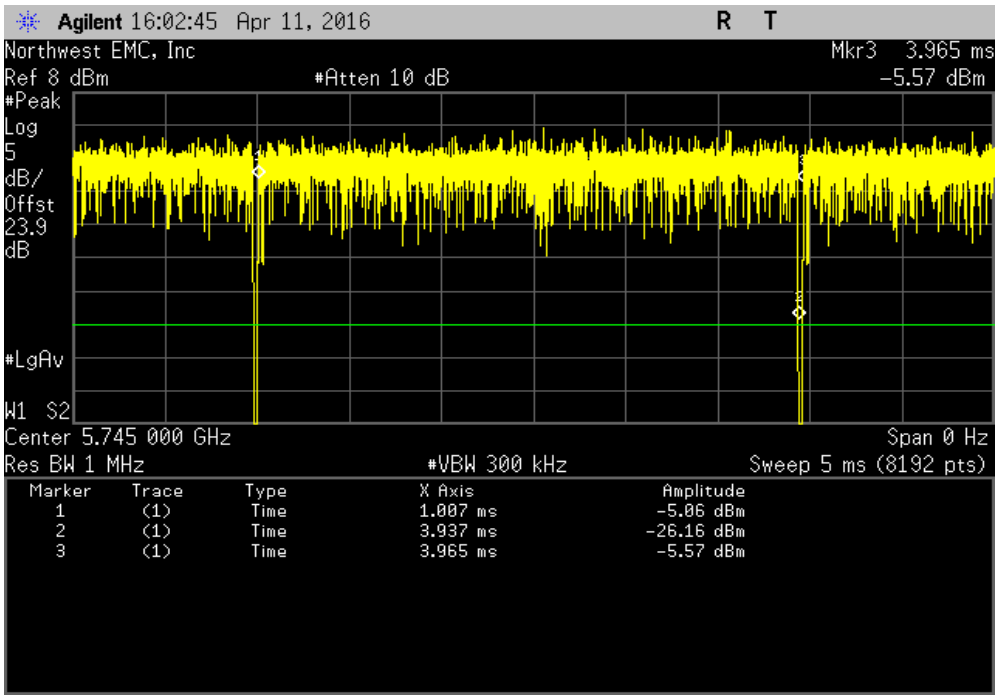
SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



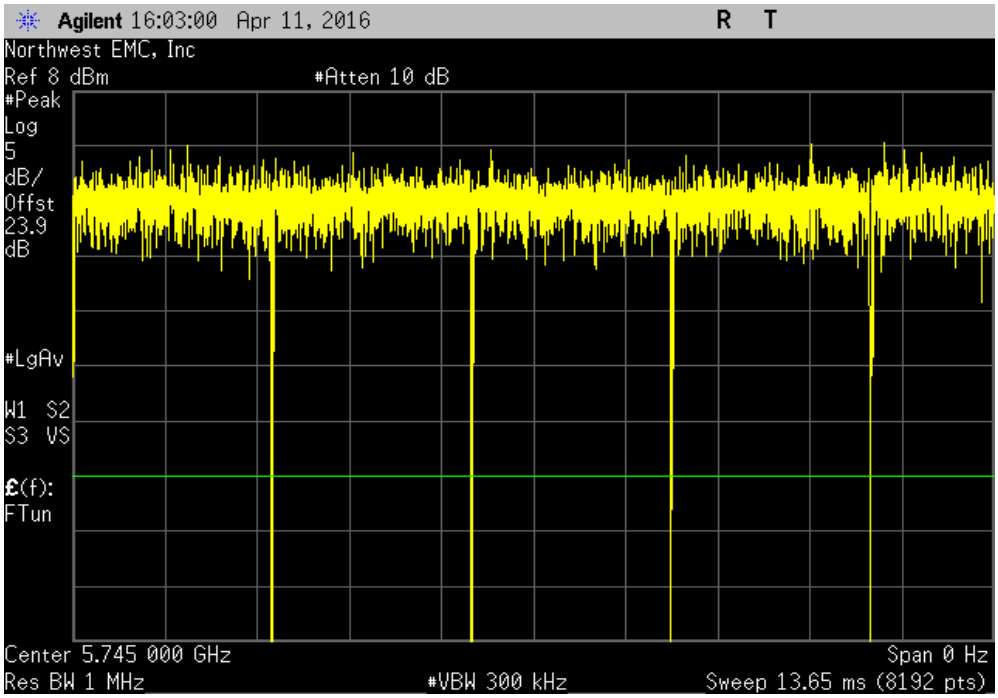
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.93 ms	2.958 ms	1	99.1	N/A	N/A



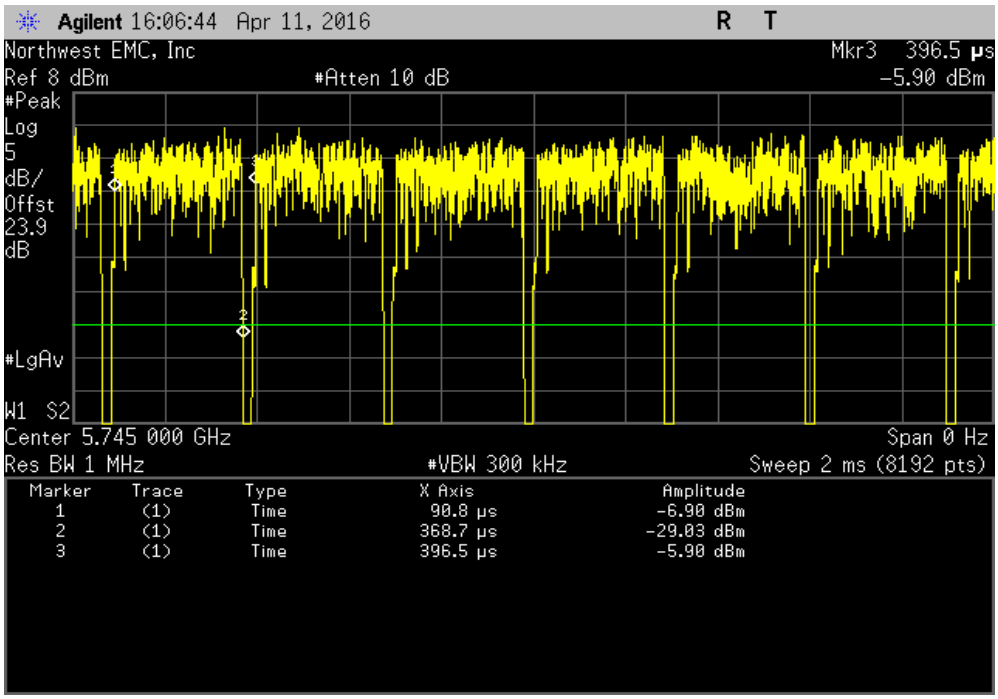
SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



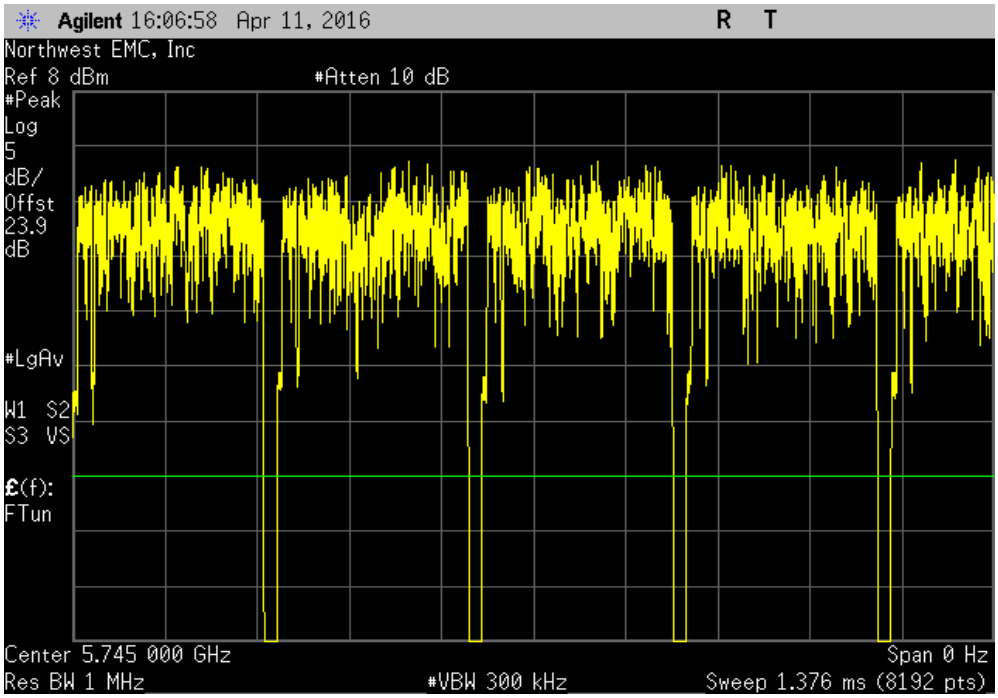
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	277.9 us	305.7 us	1	90.9	N/A	N/A



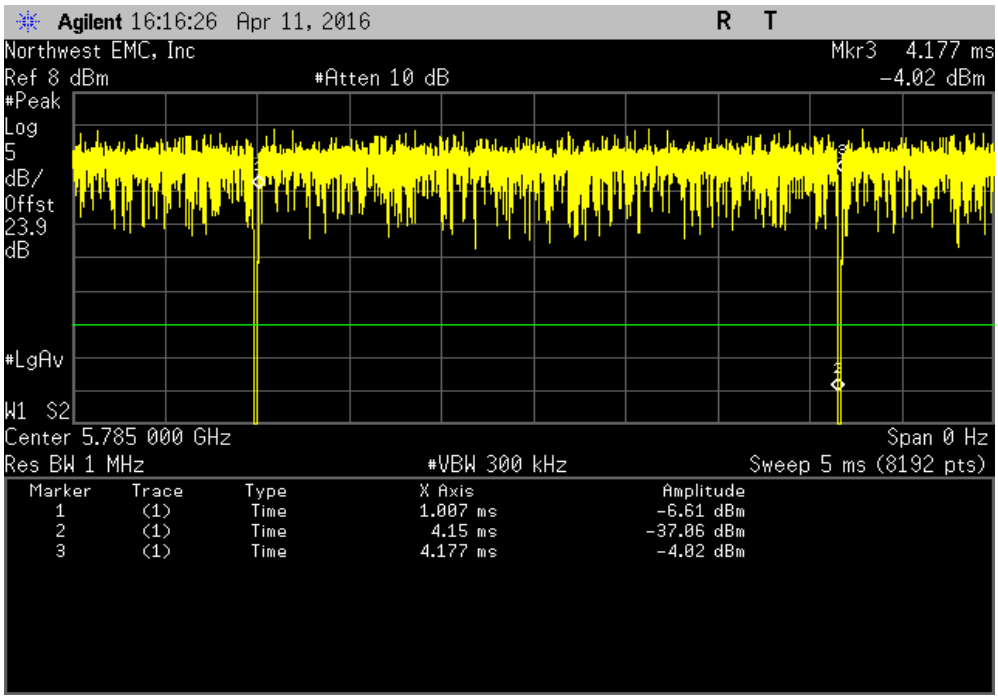
SISO, Chain B, 20MHz BW, Low Channel, Ch 149 - 5745 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



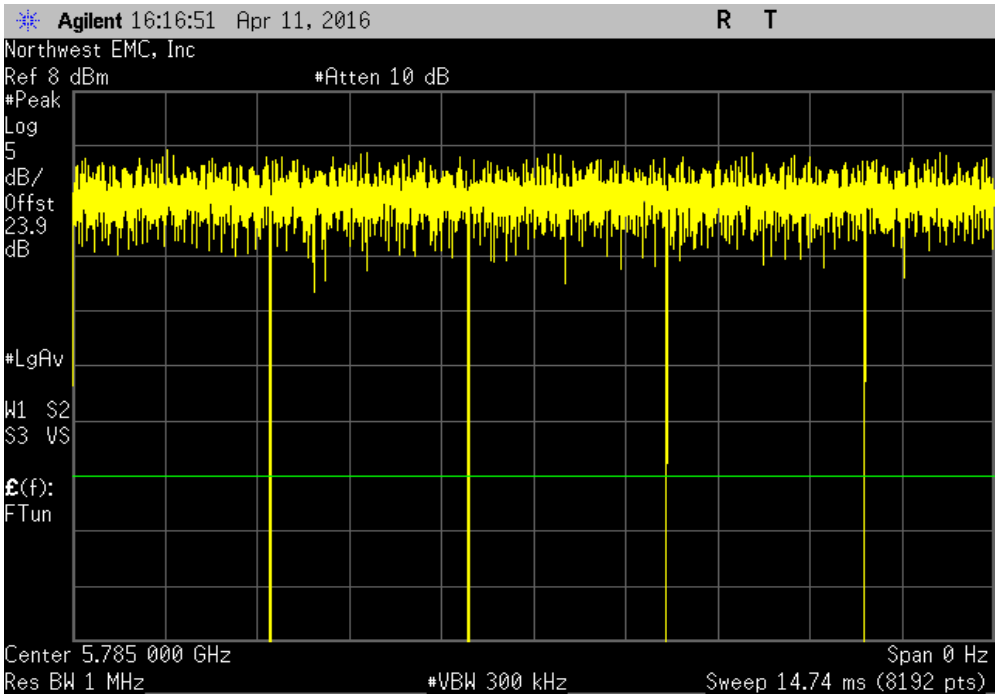
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	3.143 ms	3.17 ms	1	99.1	N/A	N/A



SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

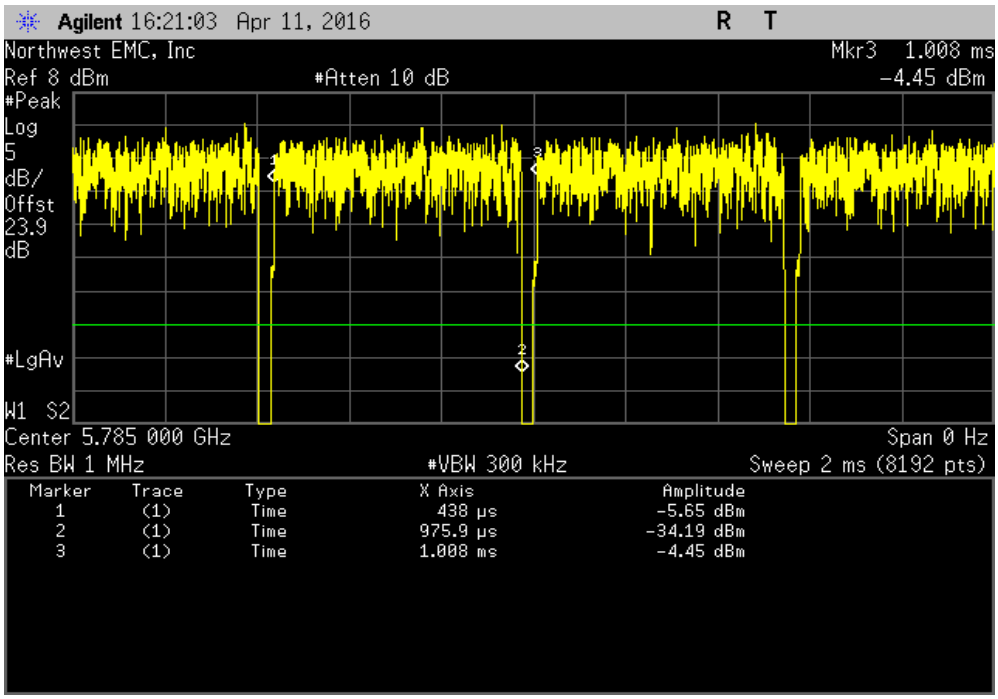


DUTY CYCLE

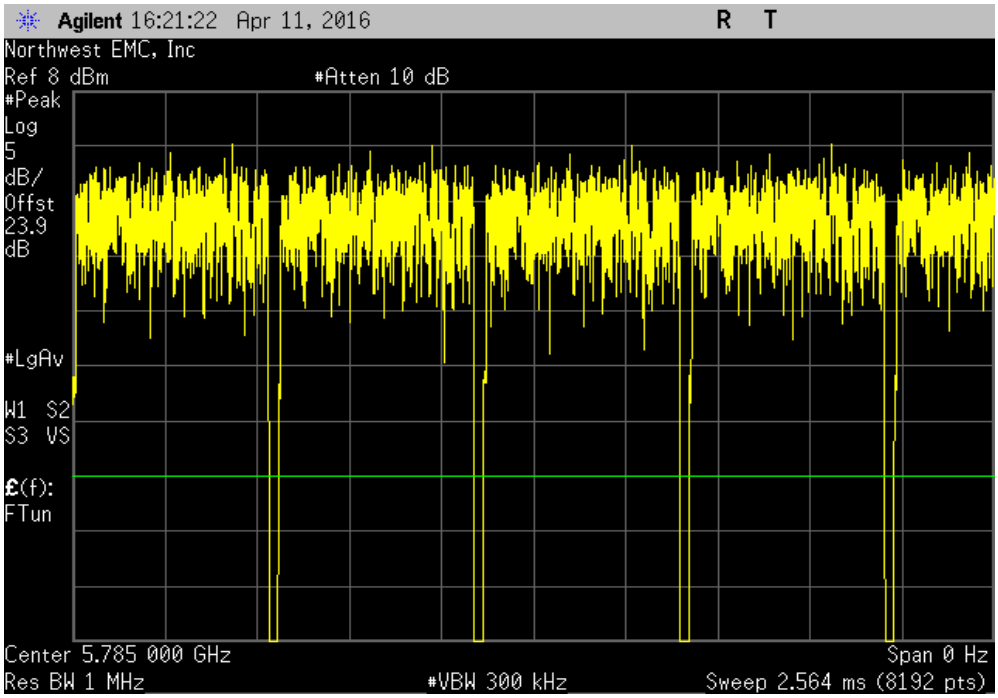
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	537.9 us	569.7 us	1	94.4	N/A	N/A



SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

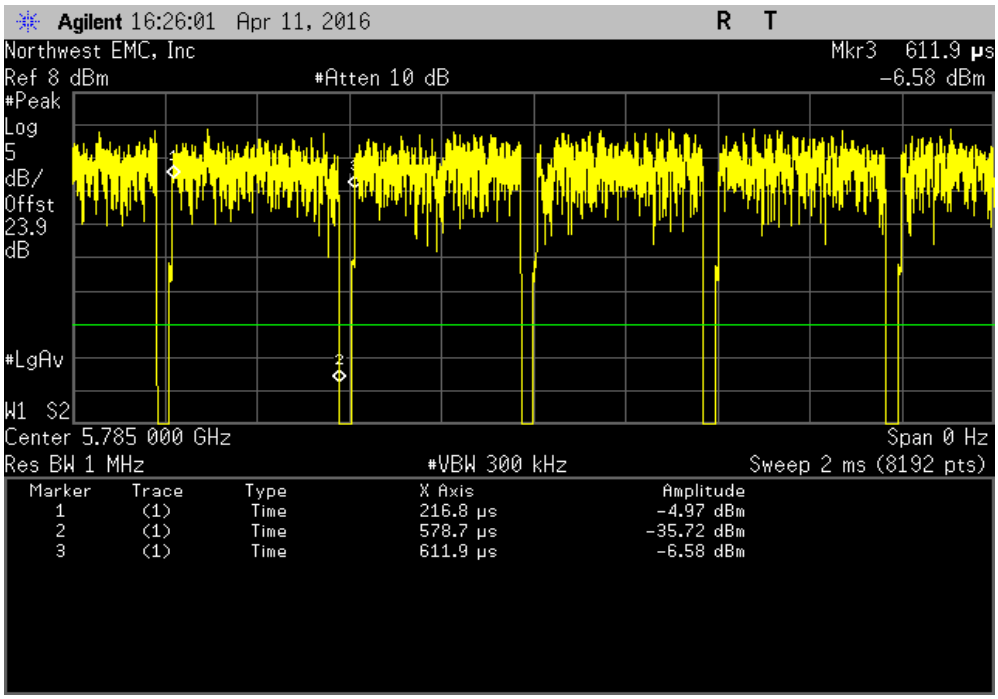


DUTY CYCLE

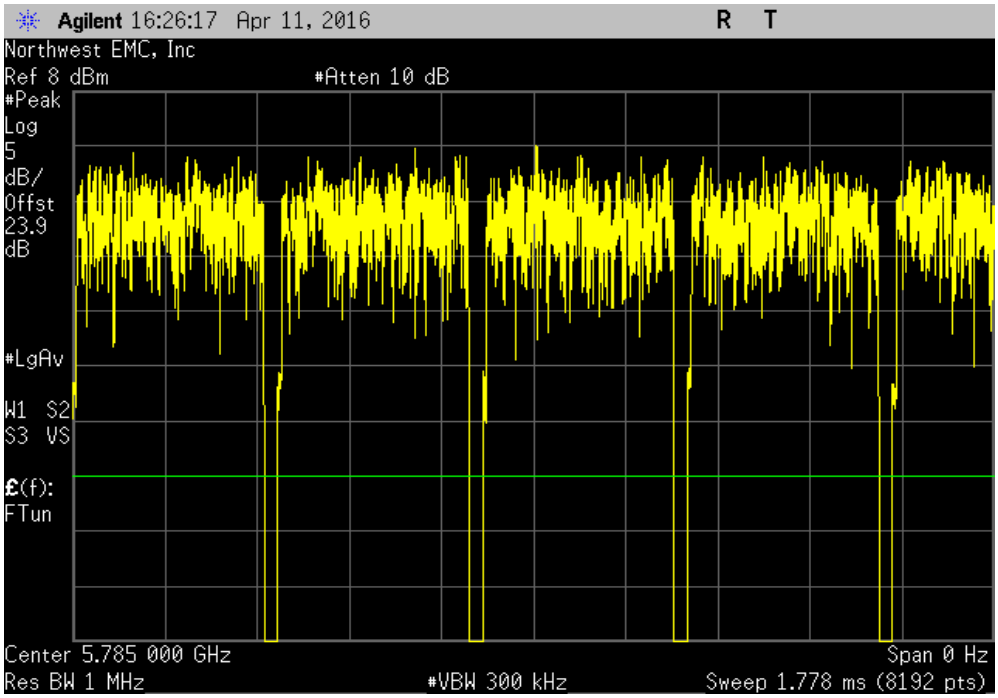
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	361.9 us	395.1 us	1	91.6	N/A	N/A



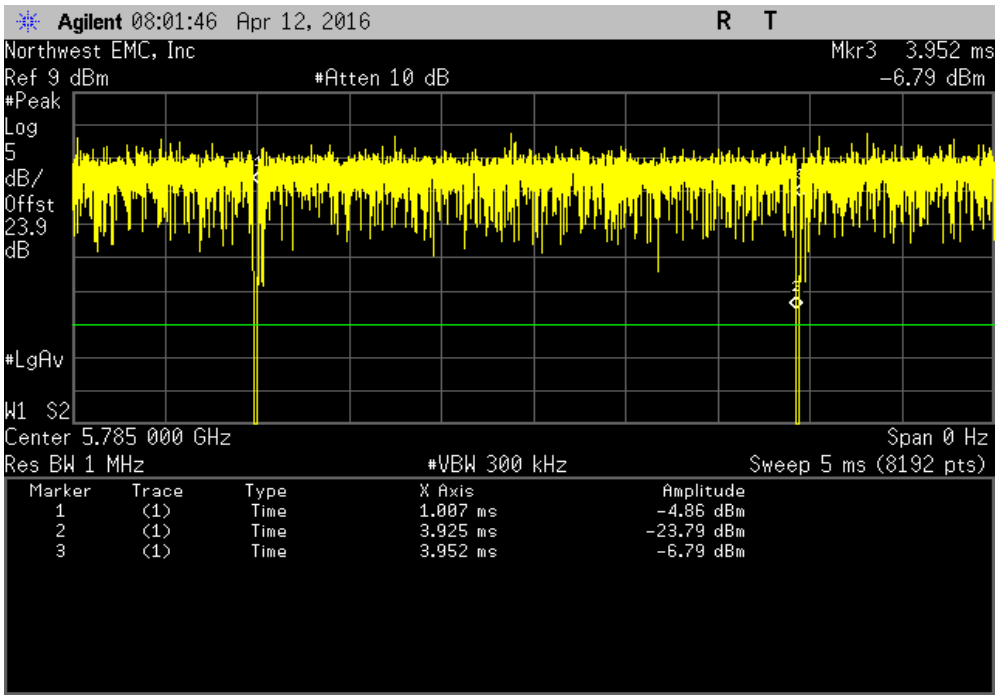
SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



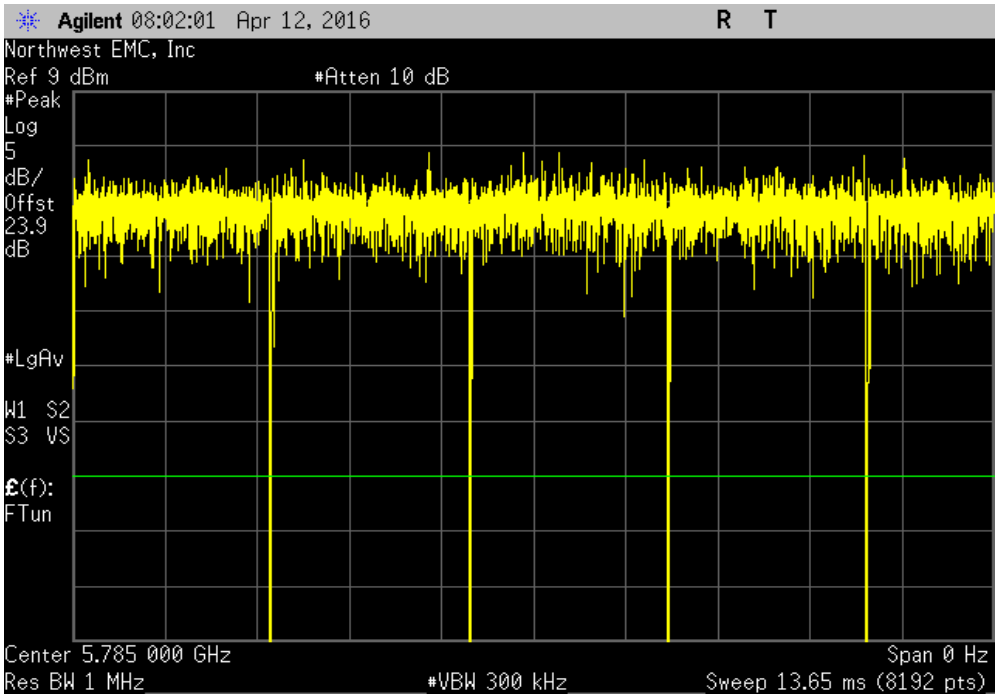
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.918 ms	2.945 ms	1	99.1	N/A	N/A



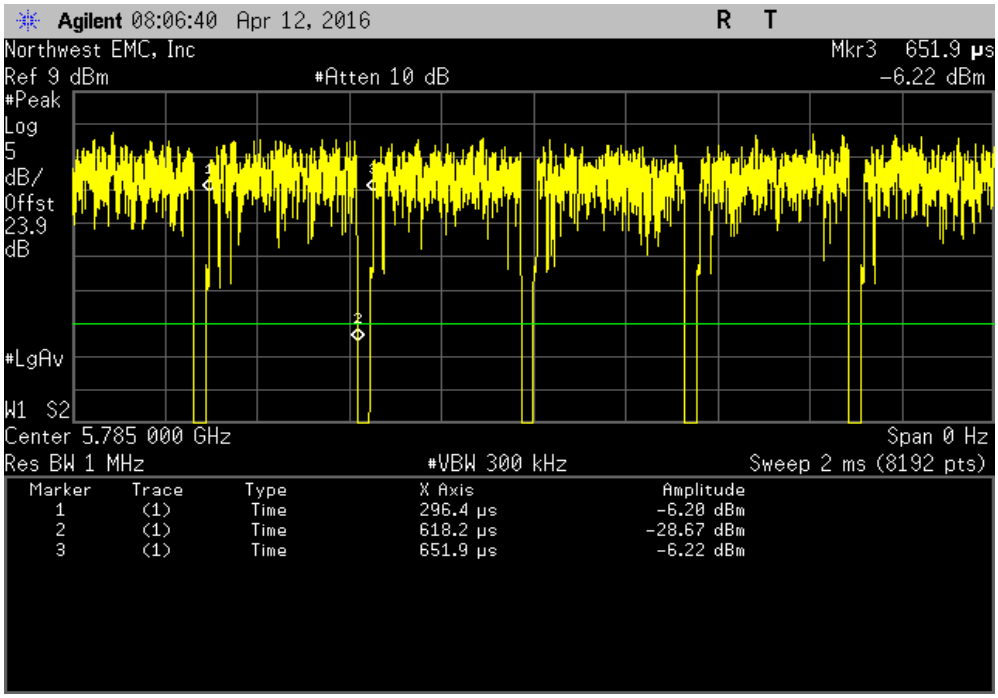
SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



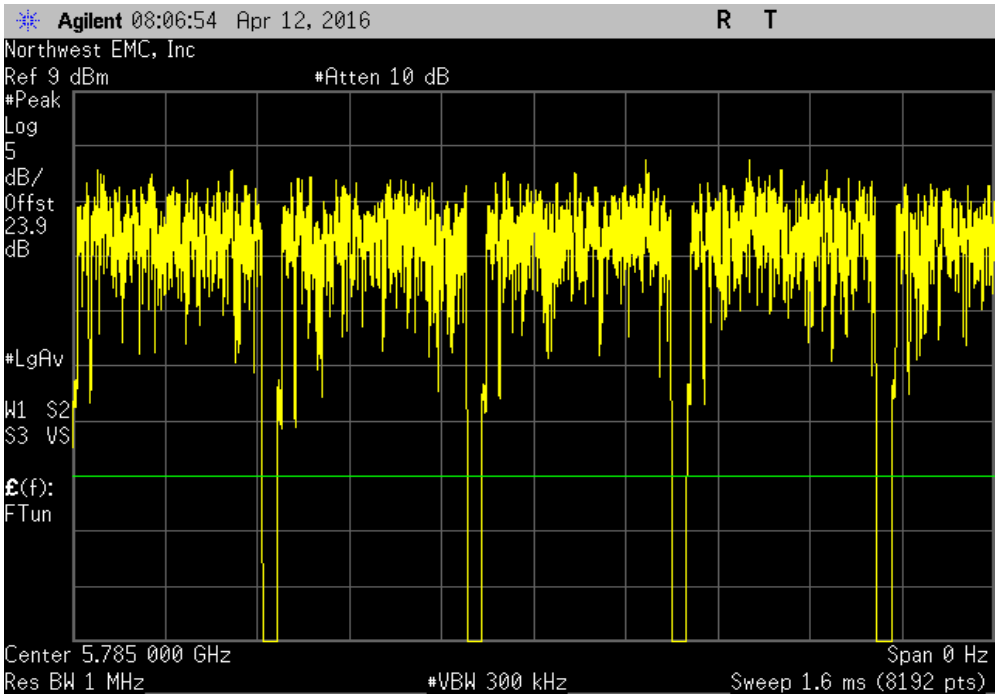
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	321.8 us	355.5 us	1	90.5	N/A	N/A



SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

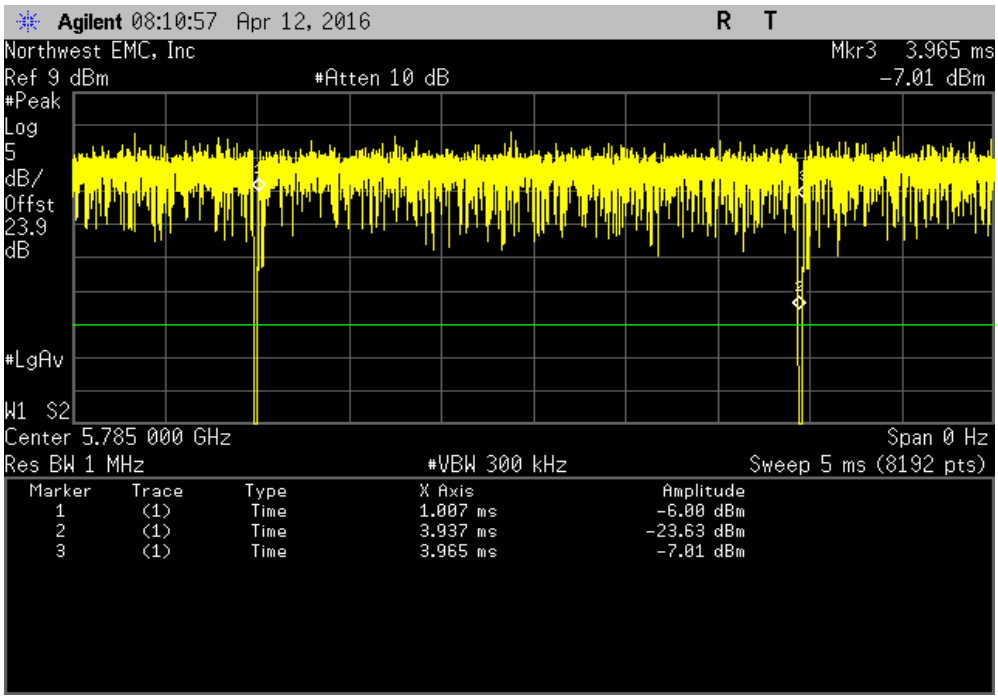


DUTY CYCLE

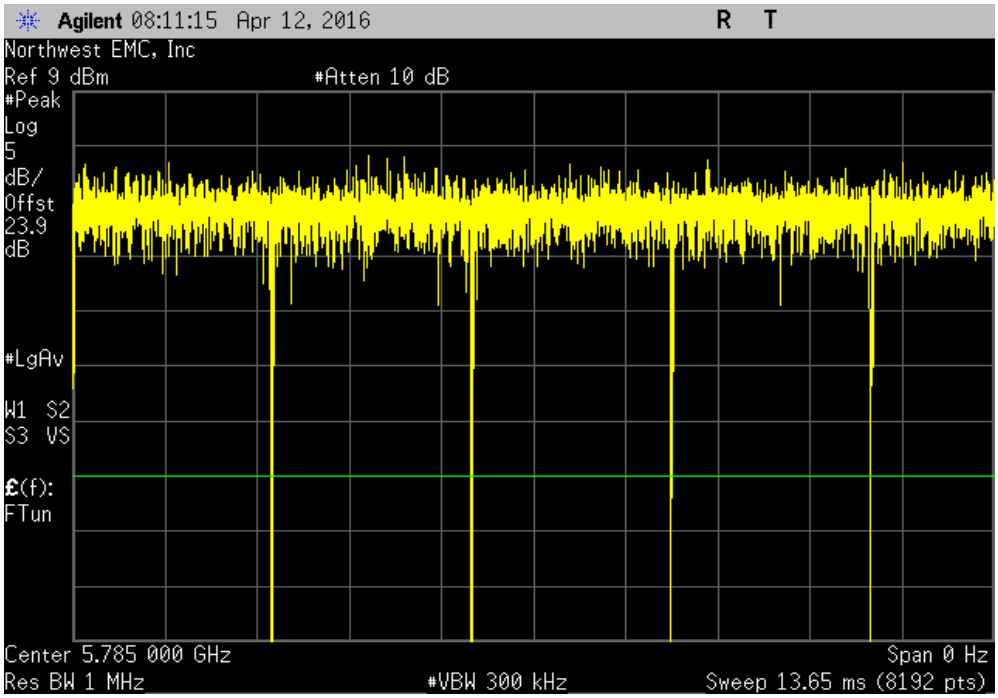
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.93 ms	2.958 ms	1	99.1	N/A	N/A



SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

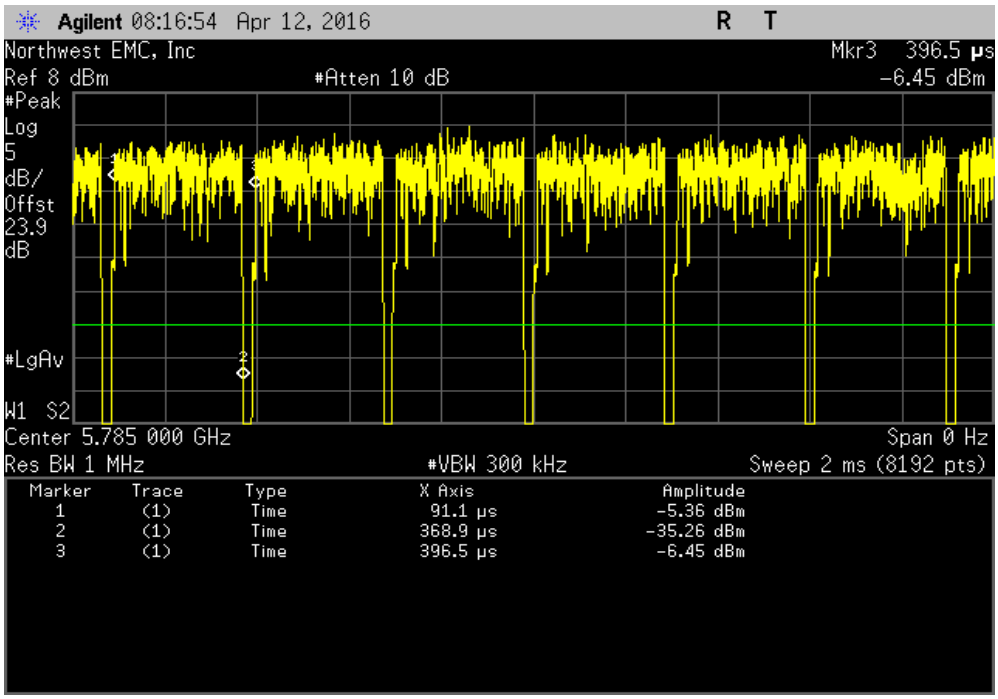


DUTY CYCLE

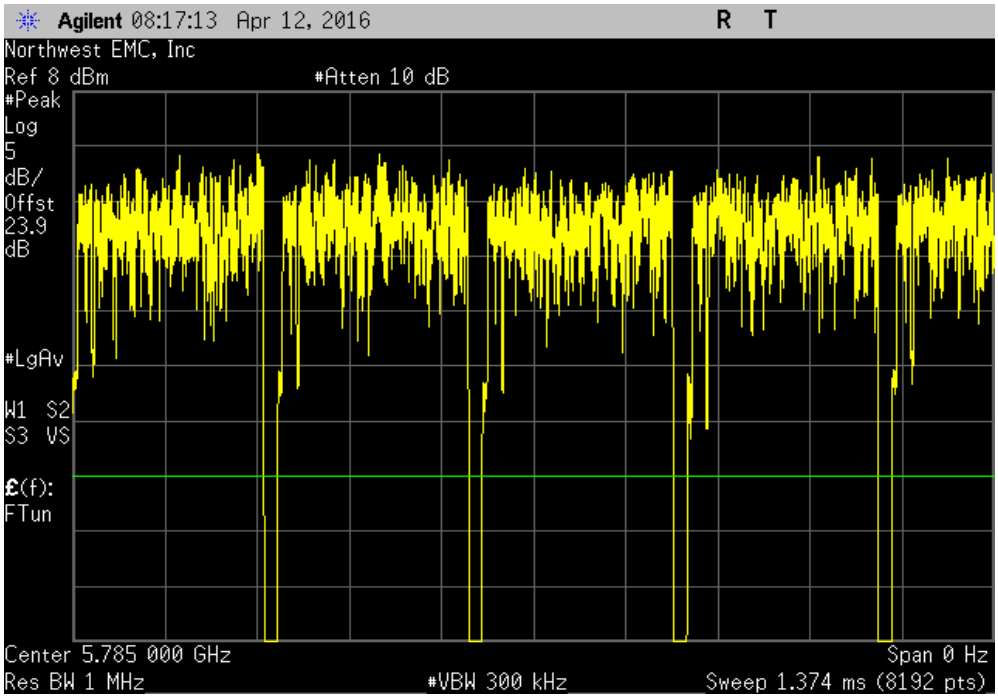
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	277.8 us	305.4 us	1	91	N/A	N/A



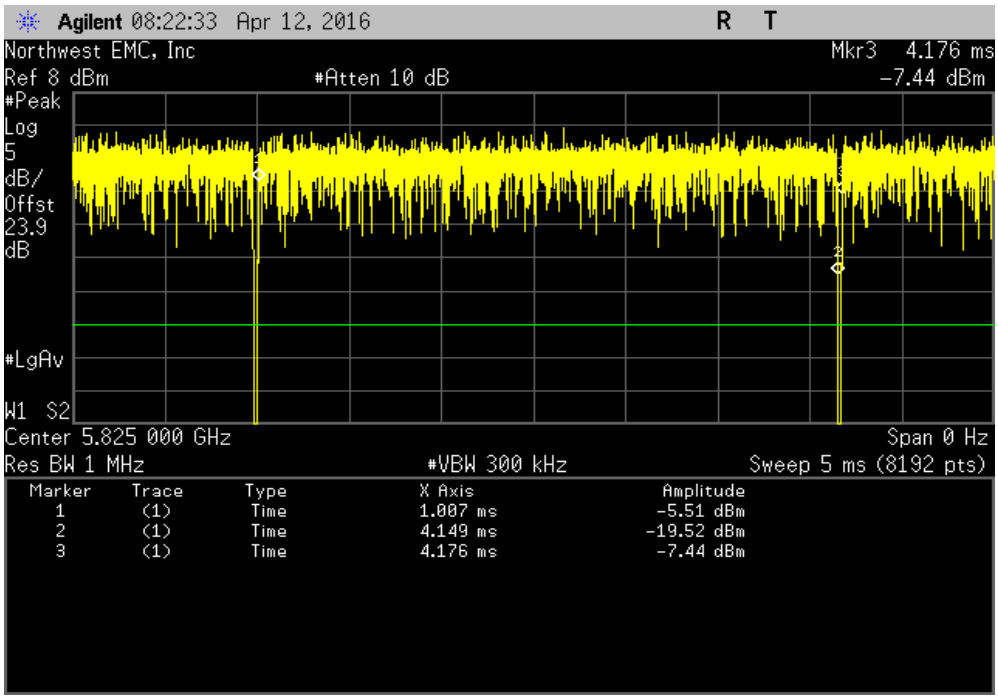
SISO, Chain B, 20MHz BW, Mid Channel, Ch 157 - 5785 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



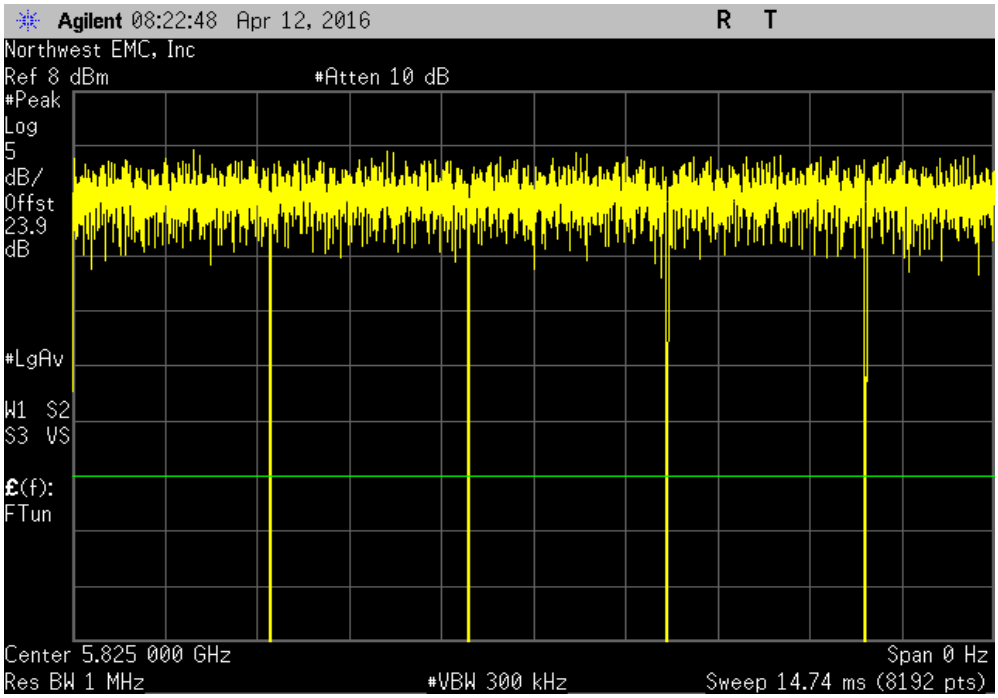
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	3.142 ms	3.169 ms	1	99.1	N/A	N/A

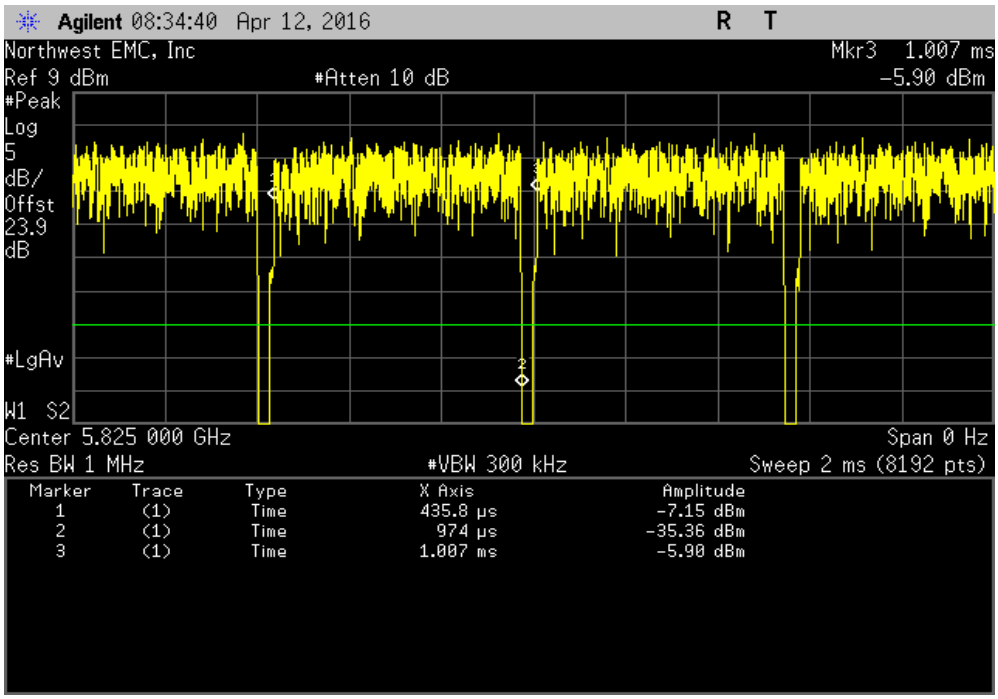


SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 6 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

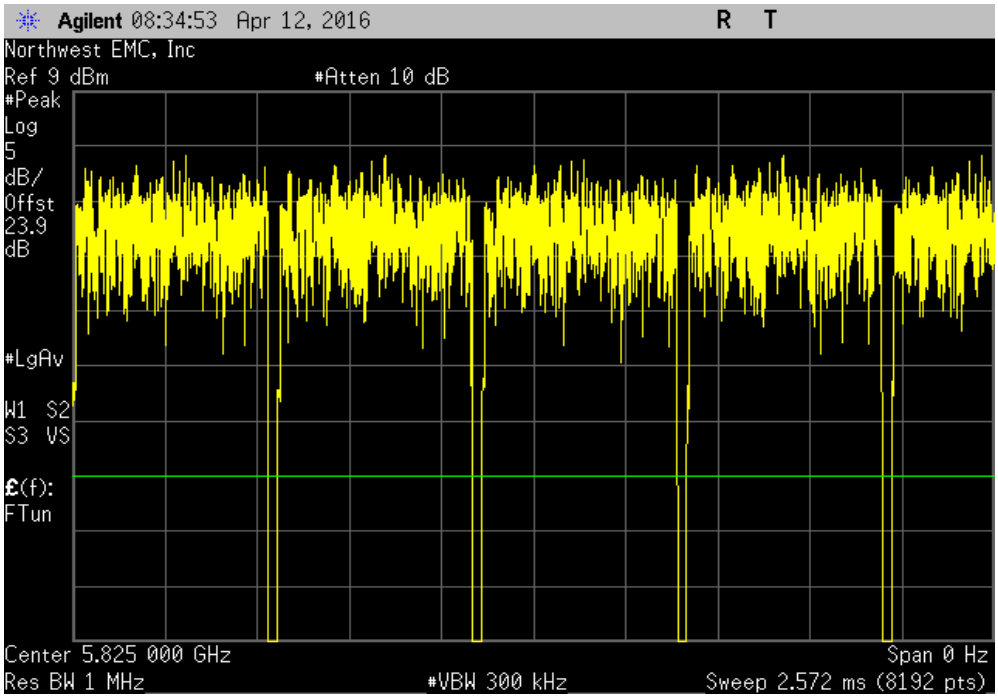


DUTY CYCLE

SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	538.2 us	571.6 us	1	94.2	N/A	N/A



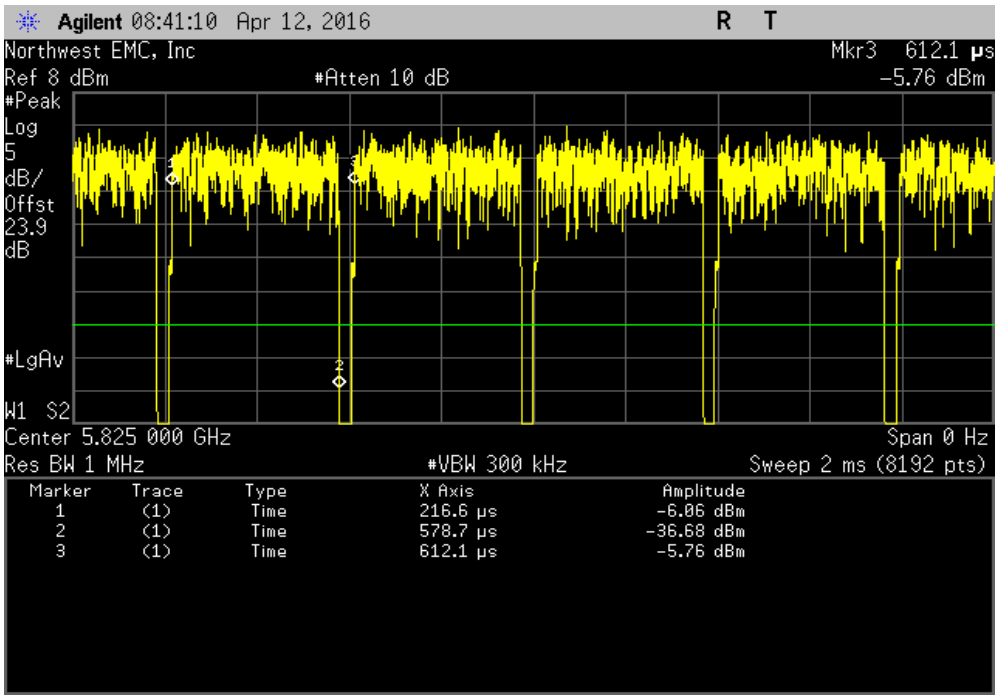
SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 36 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



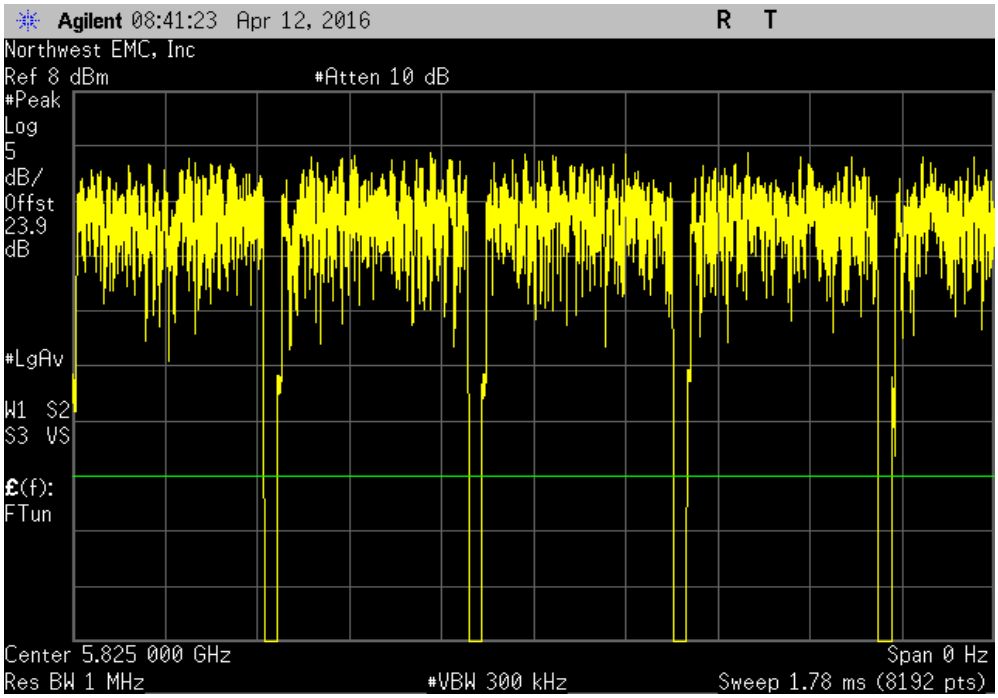
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	362.1 us	395.5 us	1	91.6	N/A	N/A



SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(a) 54 Mbps						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

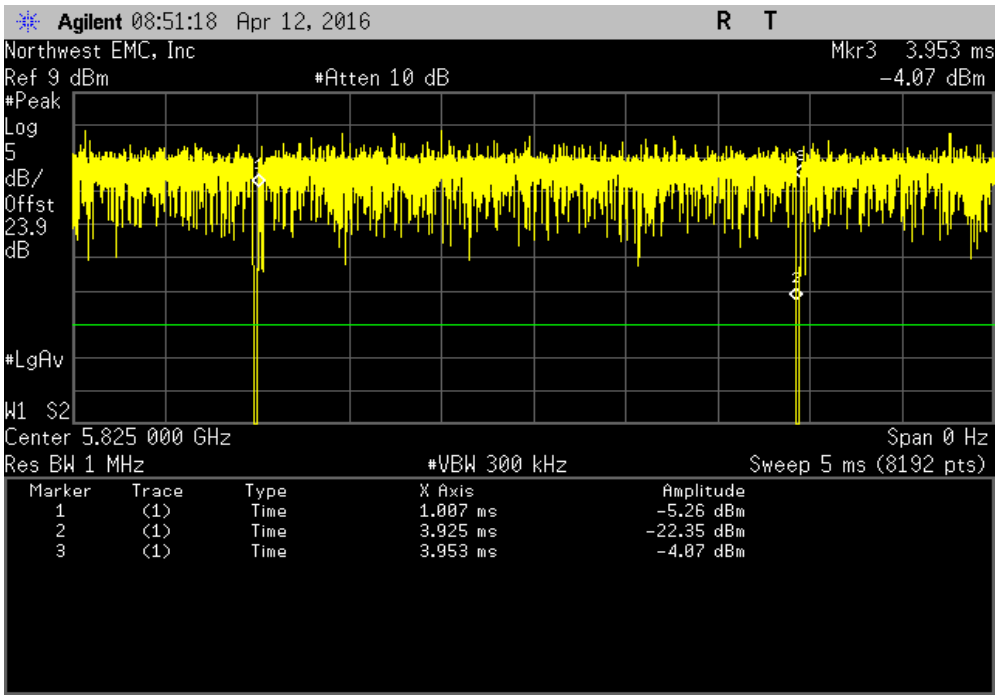


DUTY CYCLE

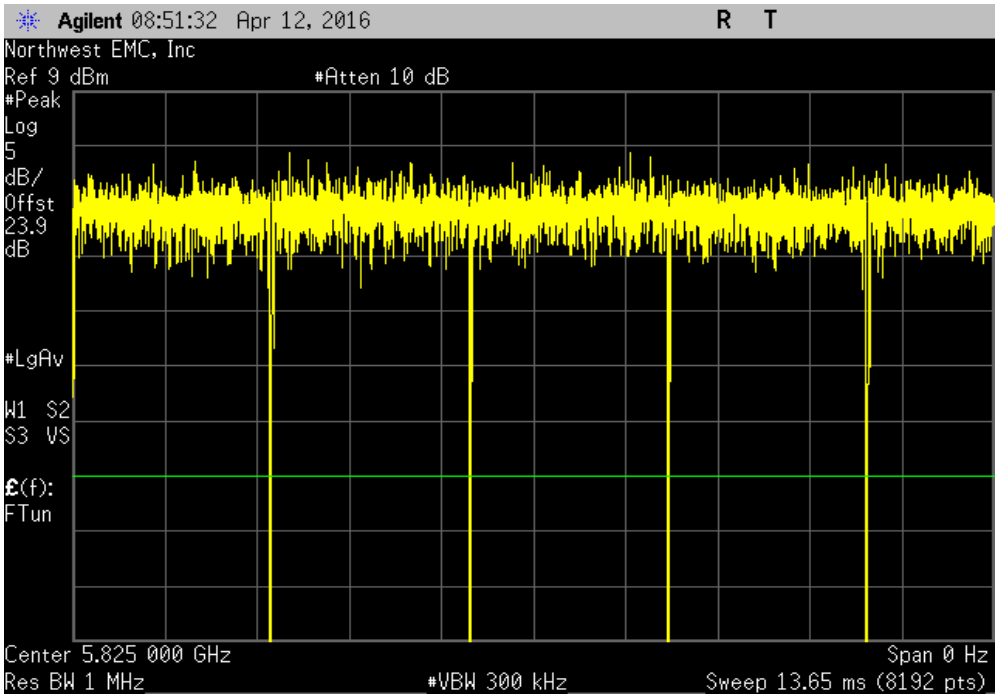
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.918 ms	2.946 ms	1	99	N/A	N/A



SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

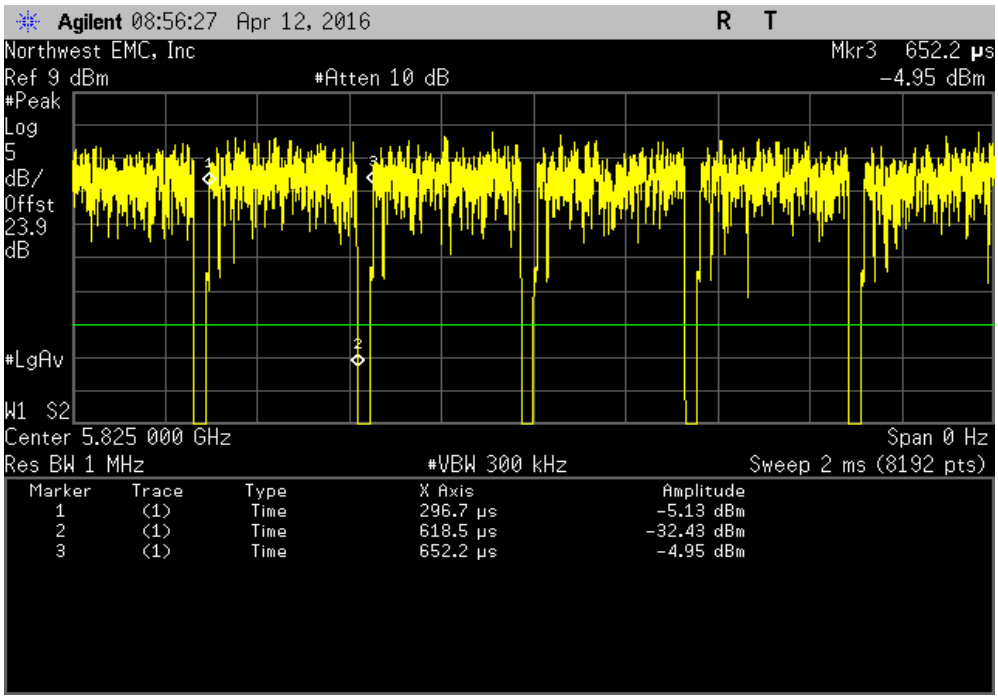


DUTY CYCLE

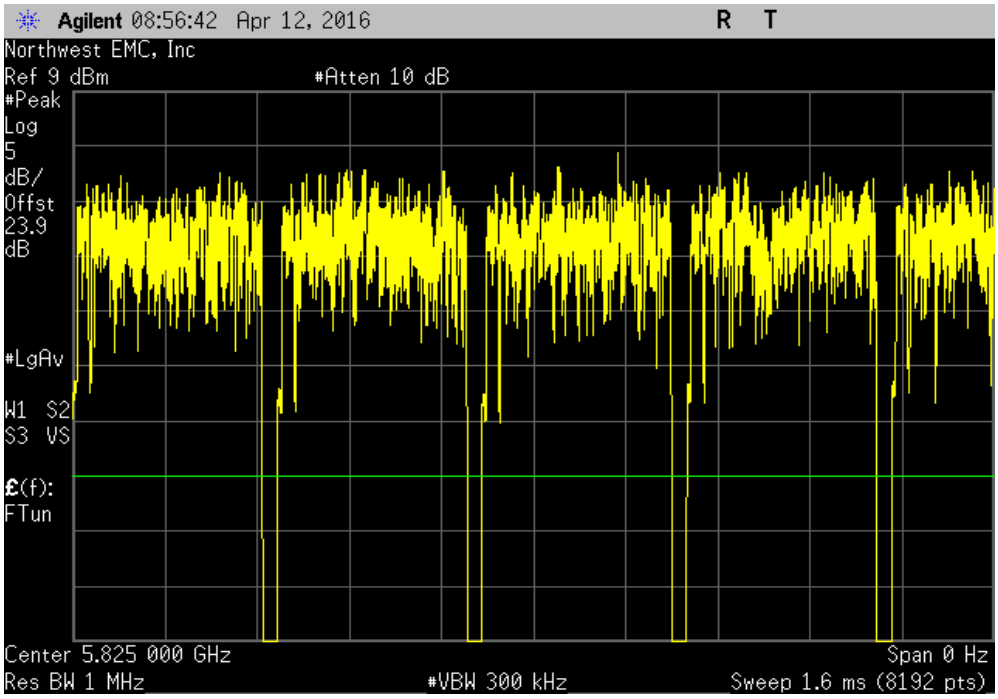
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	321.8 us	355.5 us	1	90.5	N/A	N/A



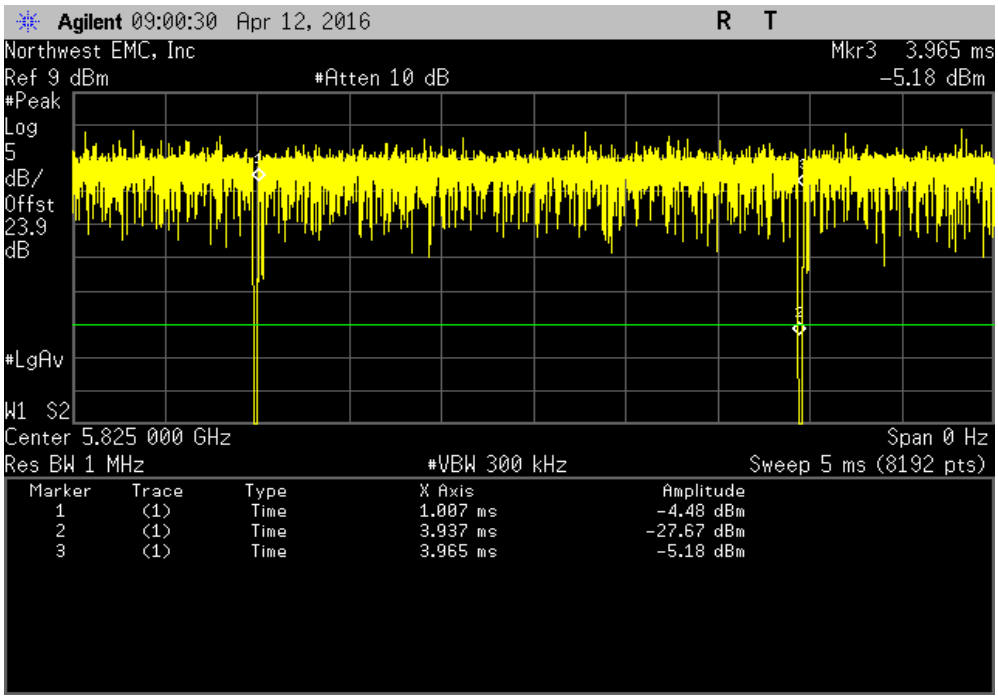
SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



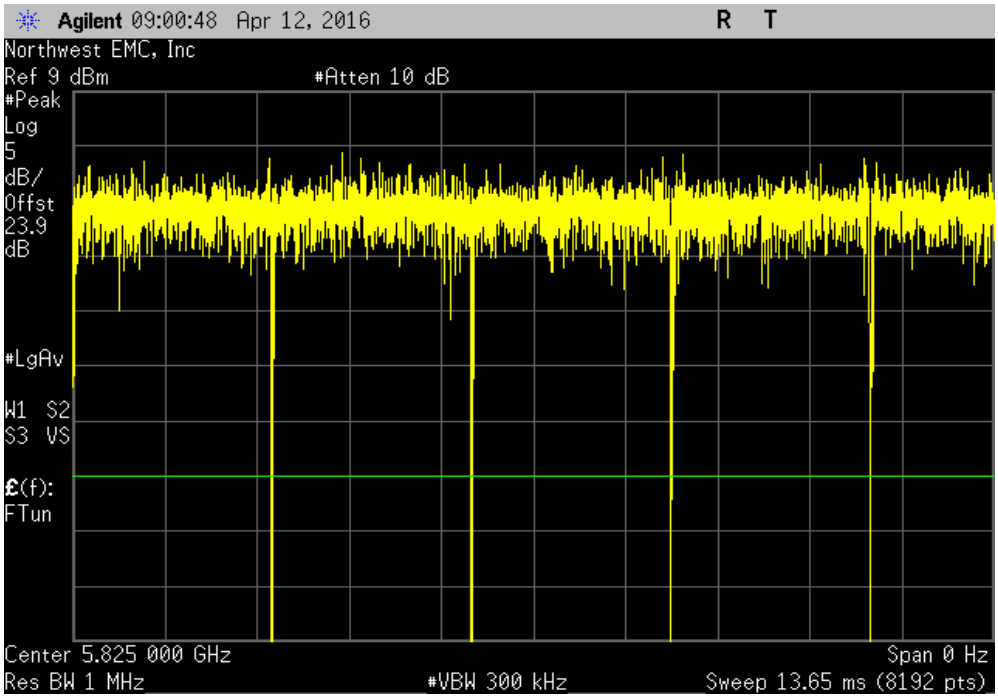
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	2.93 ms	2.958 ms	1	99.1	N/A	N/A



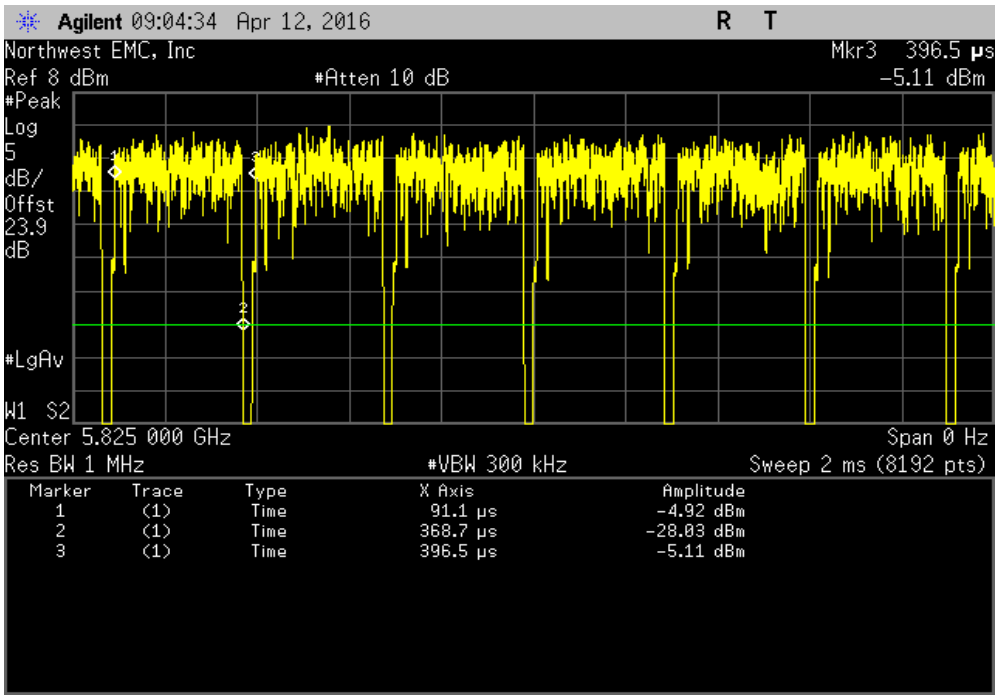
SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



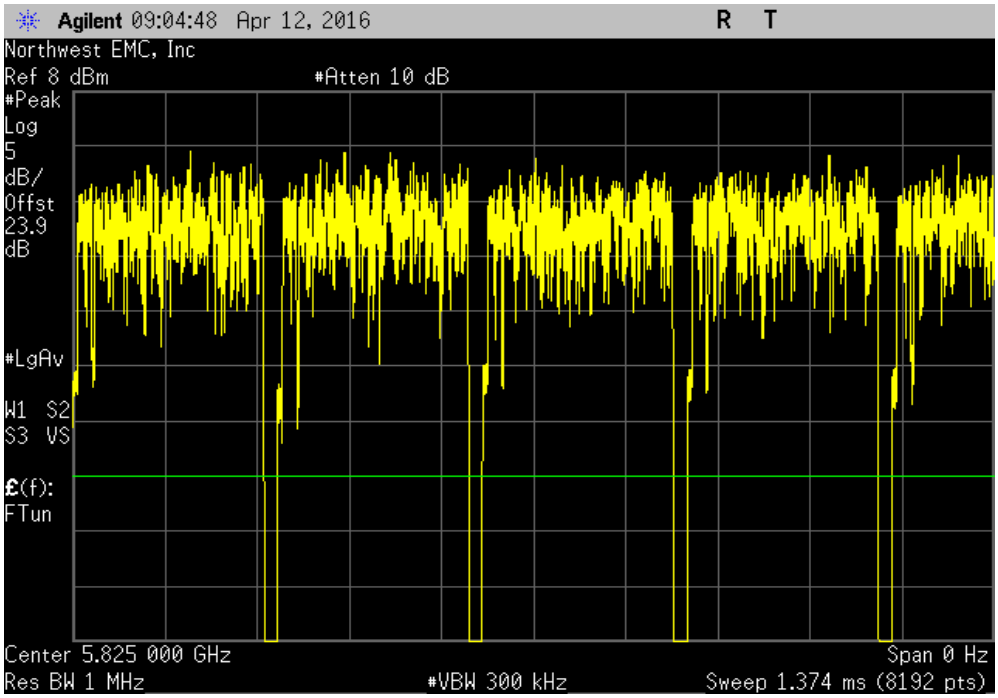
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	277.6 us	305.4 us	1	90.9	N/A	N/A



SISO, Chain B, 20MHz BW, High Channel, Ch 165 - 5825 MHz, 802.11(ac) MCS8						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

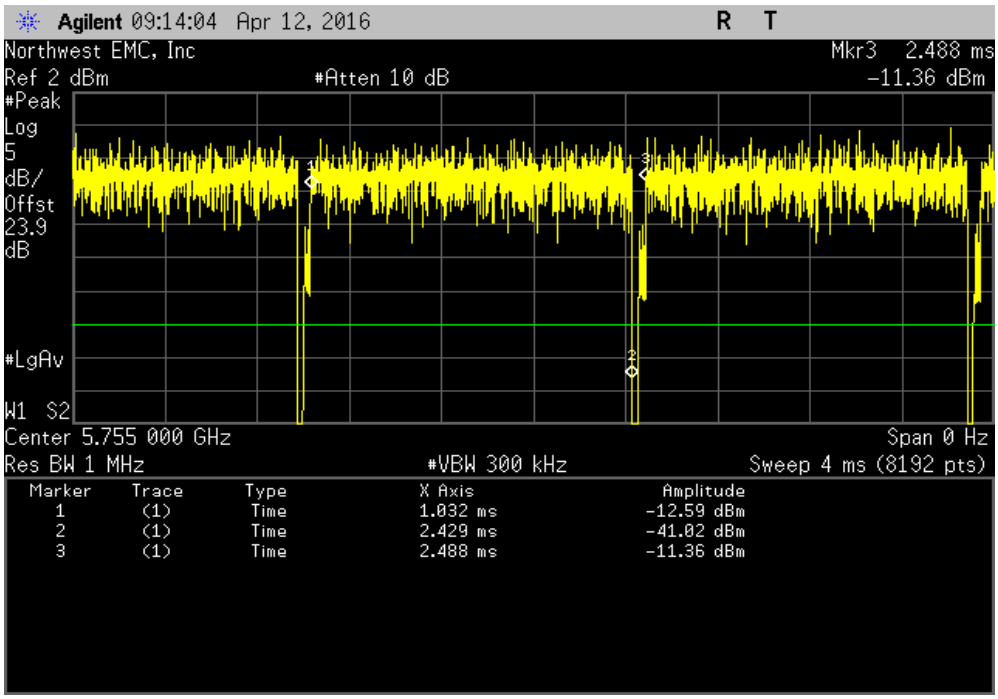


DUTY CYCLE

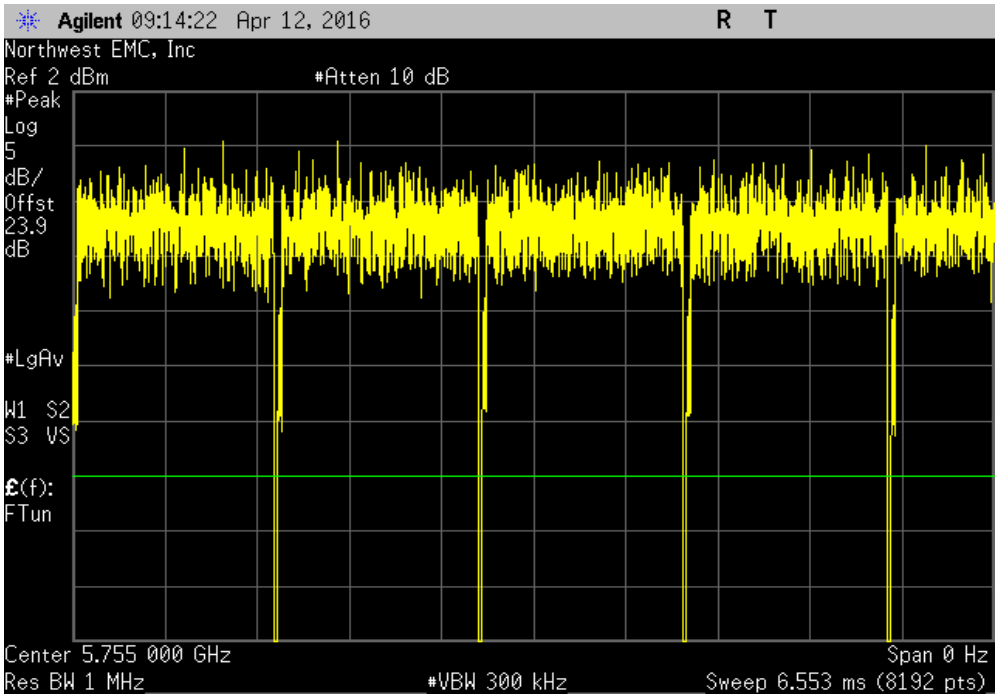
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.397 ms	1.456 ms	1	95.9	N/A	N/A

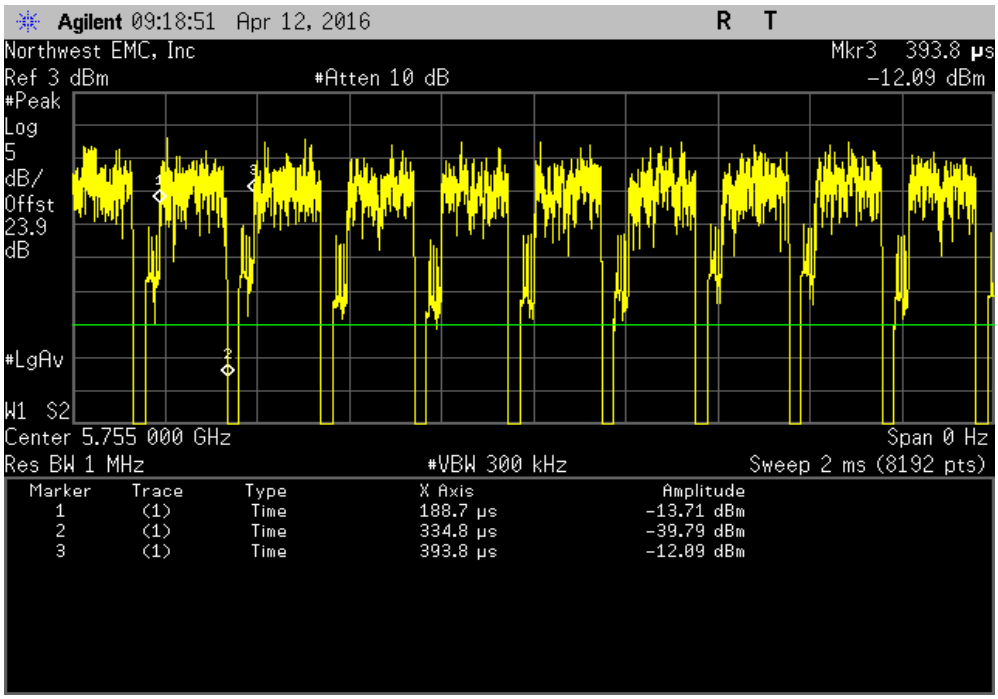


SISO, Chain B, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

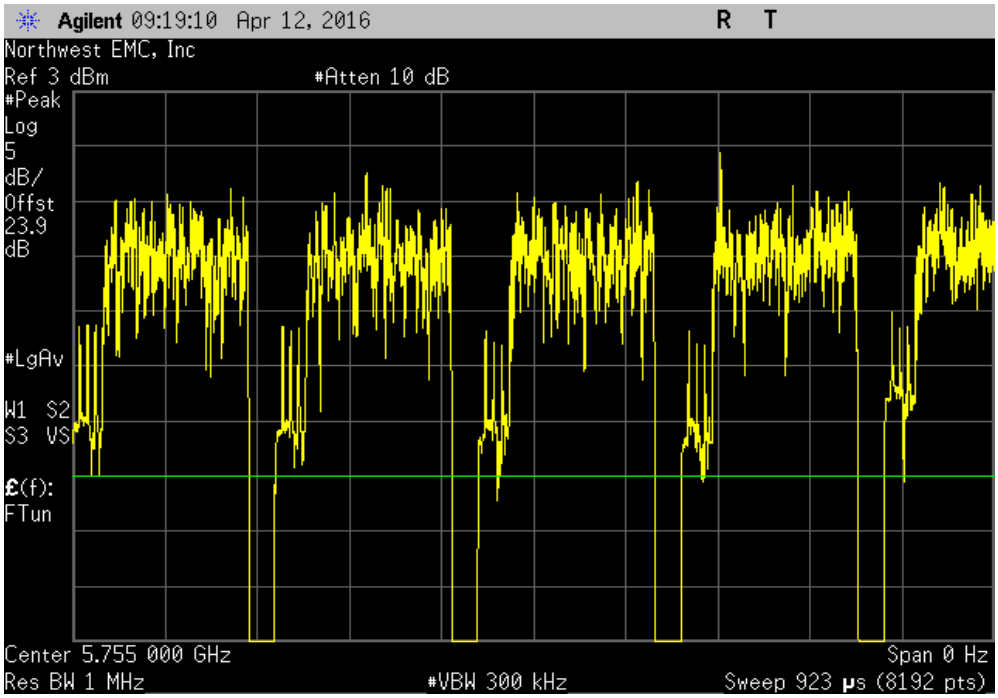


DUTY CYCLE

SISO, Chain B, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	146.1 us	205.1 us	1	71.2	N/A	N/A



SISO, Chain B, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

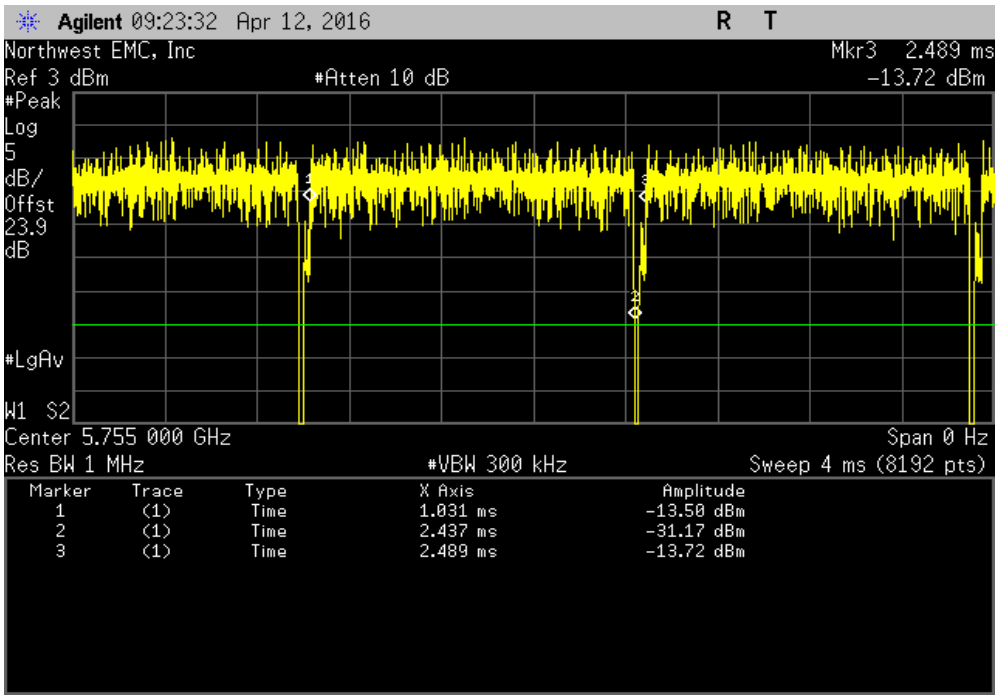


DUTY CYCLE

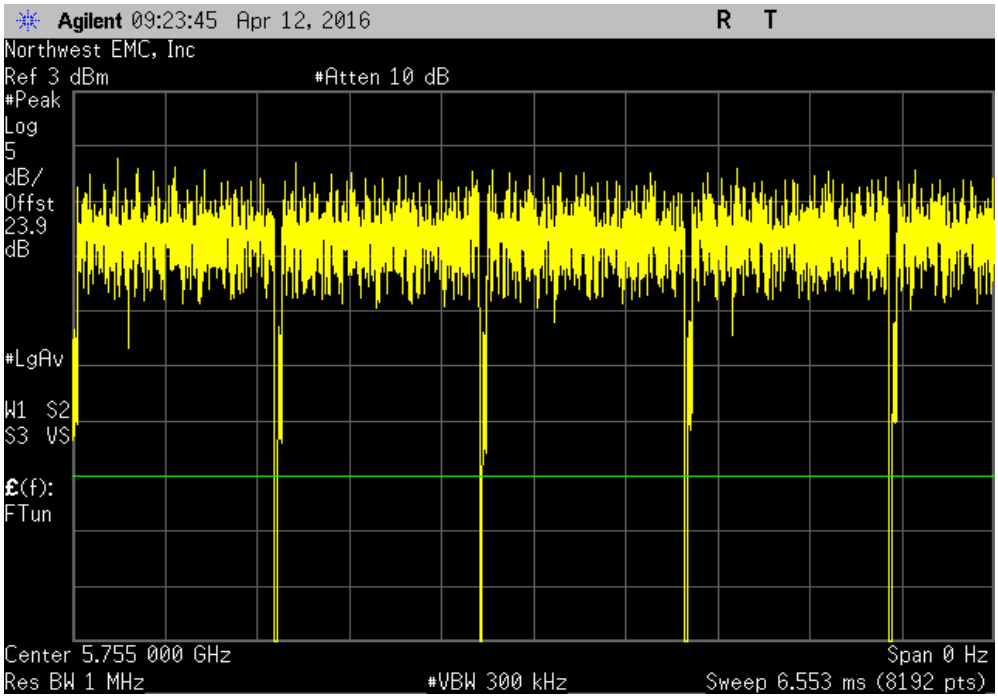
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.406 ms	1.457 ms	1	96.5	N/A	N/A



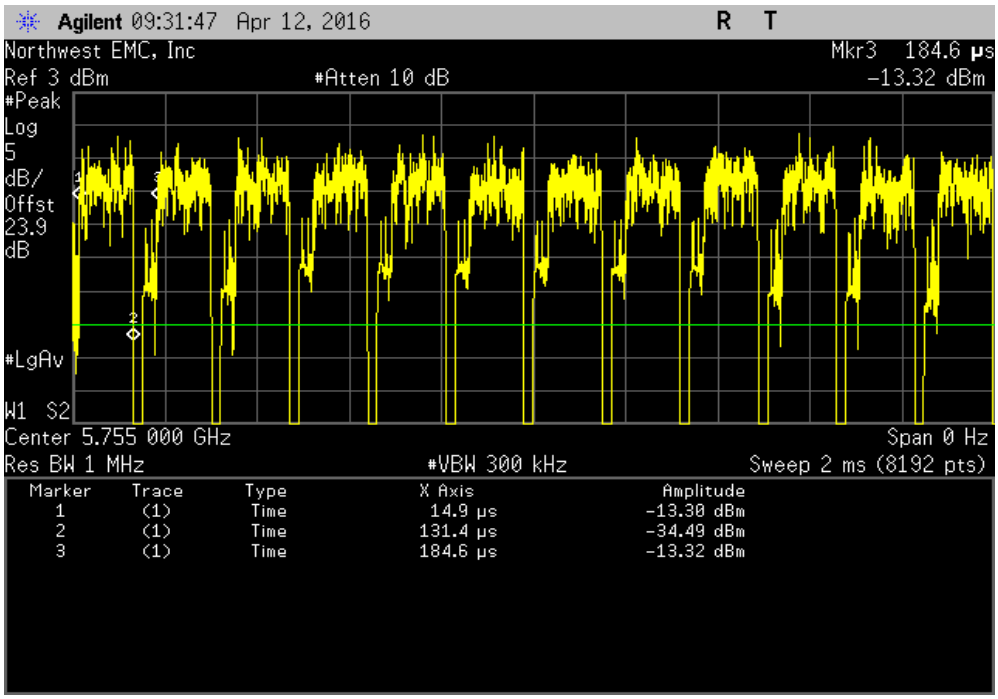
SISO, Chain B, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



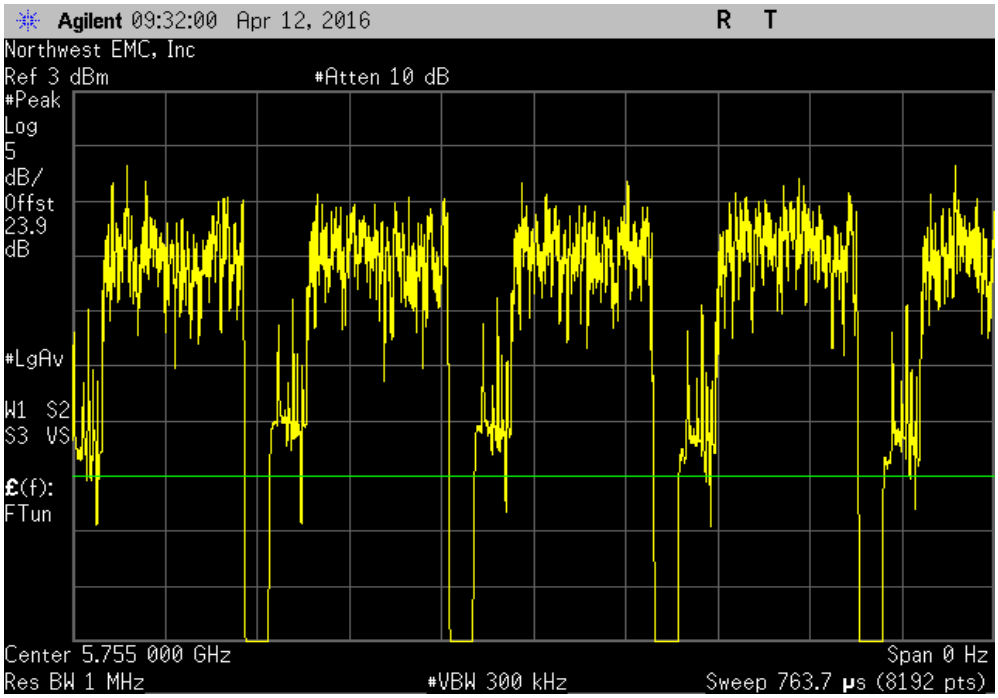
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	116.5 us	169.7 us	1	68.7	N/A	N/A



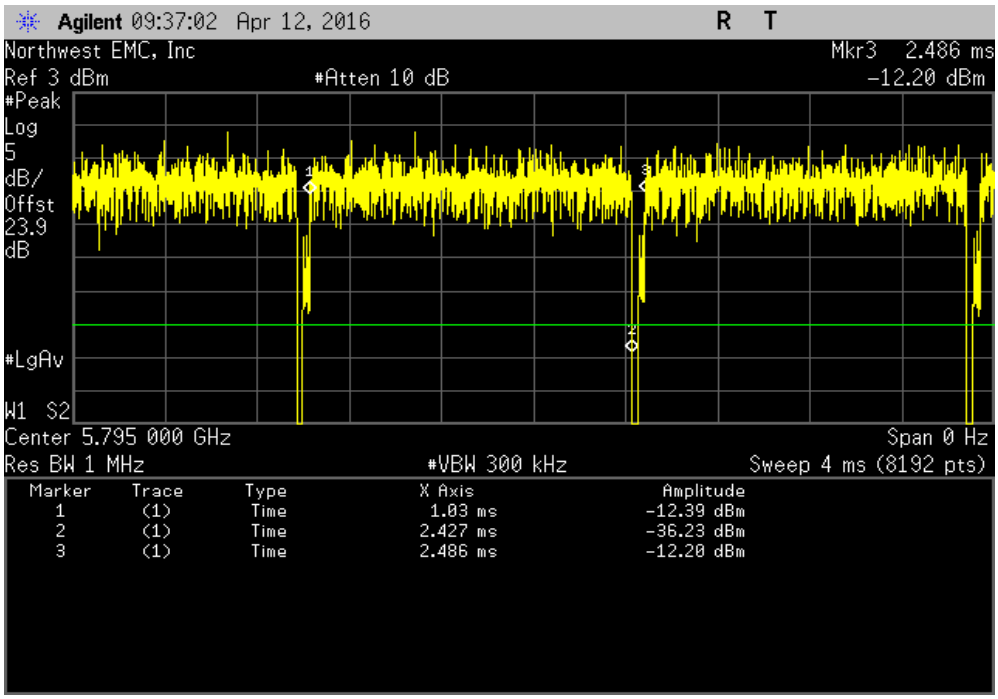
SISO, Chain B, 40MHz BW, Low Channel, Ch 149/153 - 5755 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A



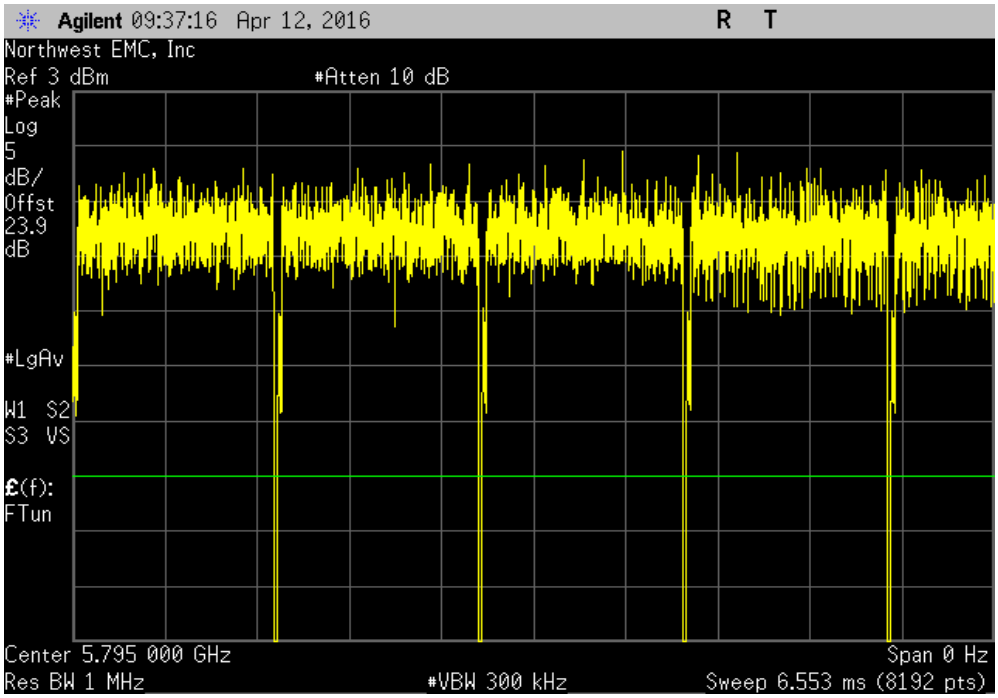
DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.397 ms	1.456 ms	1	95.9	N/A	N/A



SISO, Chain B, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(n) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

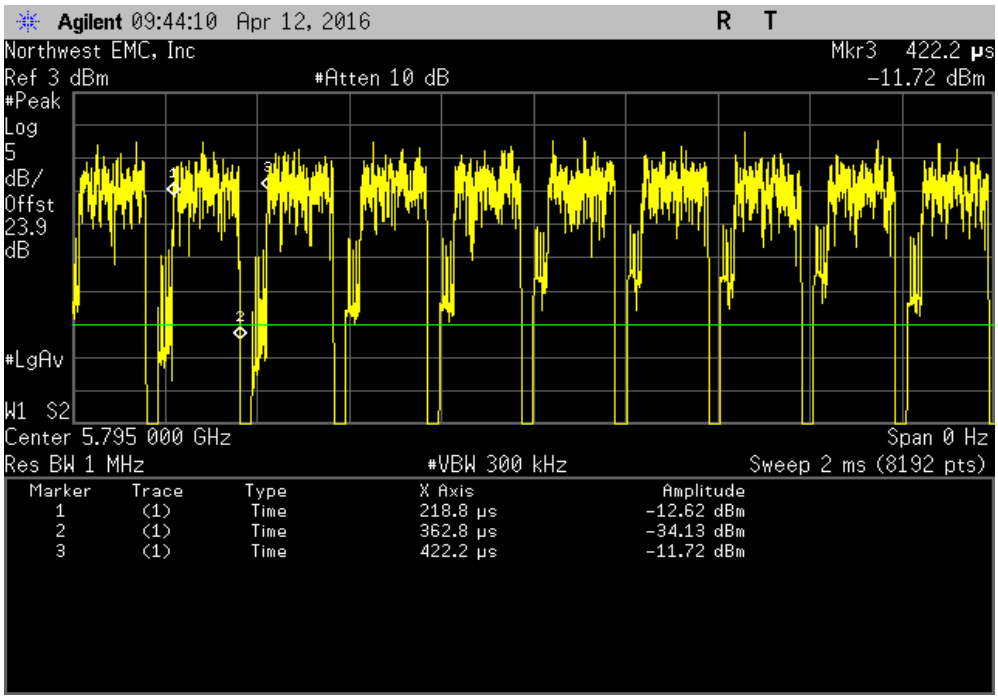


DUTY CYCLE

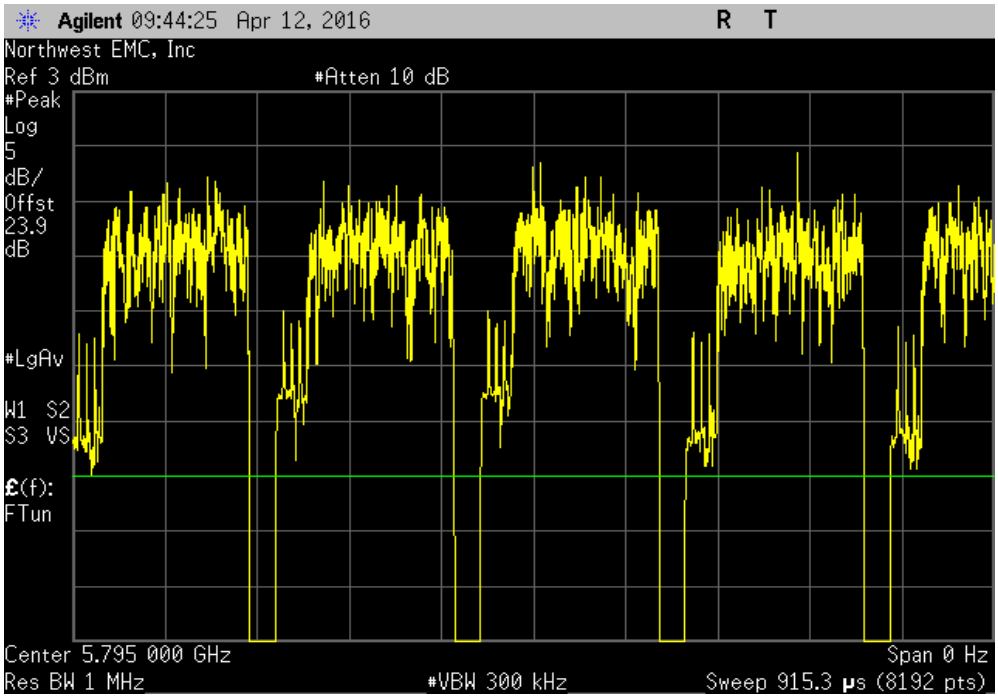
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	144 us	203.4 us	1	70.8	N/A	N/A



SISO, Chain B, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(n) MCS7						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

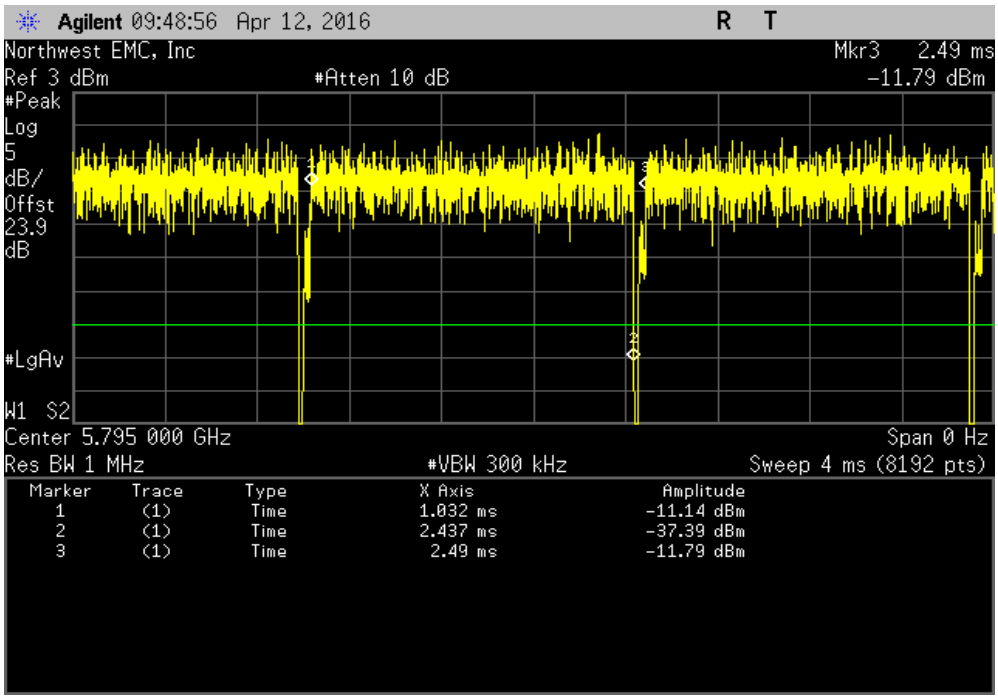


DUTY CYCLE

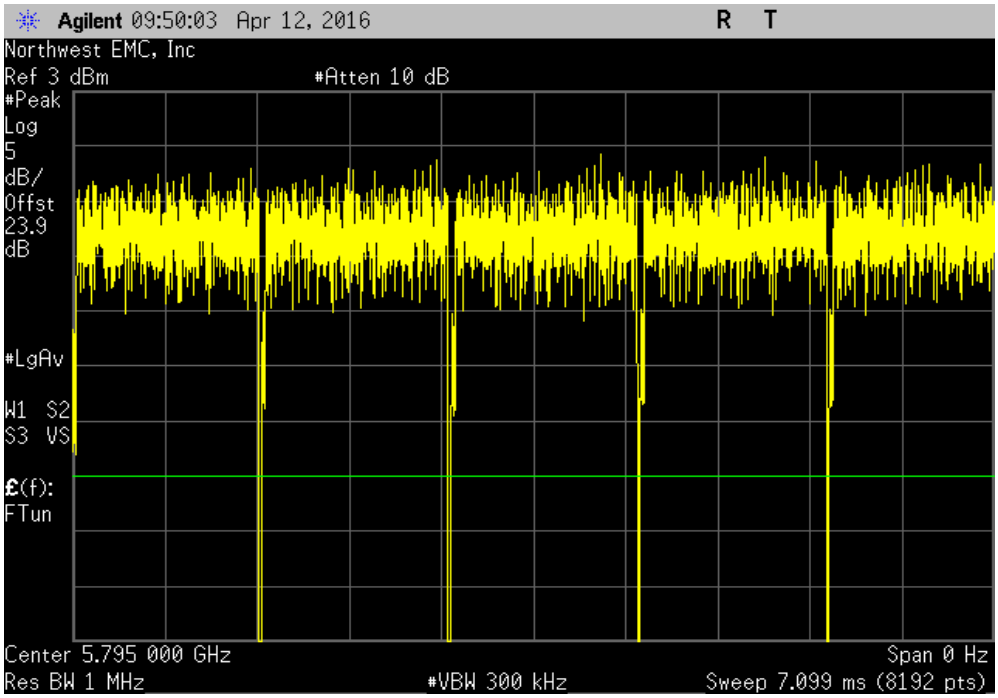
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	1.404 ms	1.458 ms	1	96.3	N/A	N/A

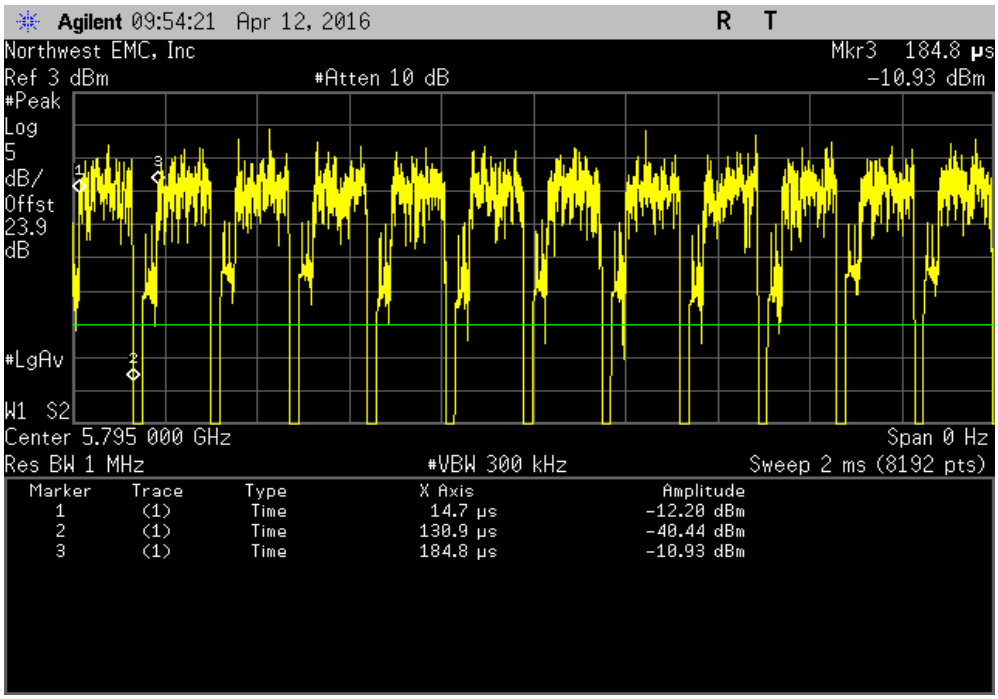


SISO, Chain B, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A

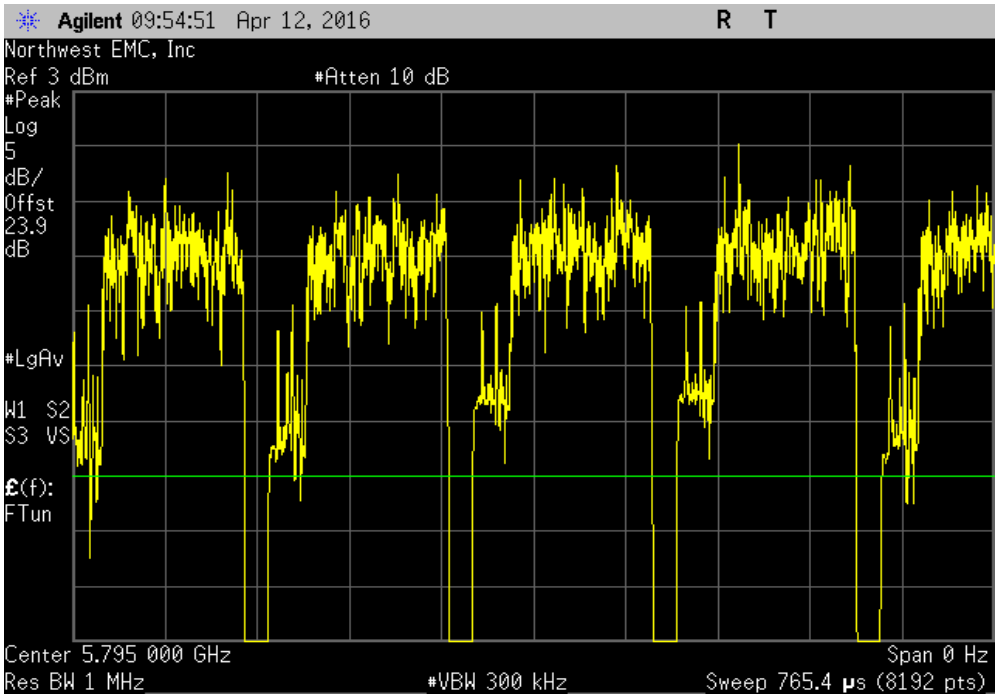


DUTY CYCLE

SISO, Chain B, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	116.2 us	170.1 us	1	68.3	N/A	N/A



SISO, Chain B, 40MHz BW, High Channel, Ch 157/161 - 5795 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	6	N/A	N/A	N/A

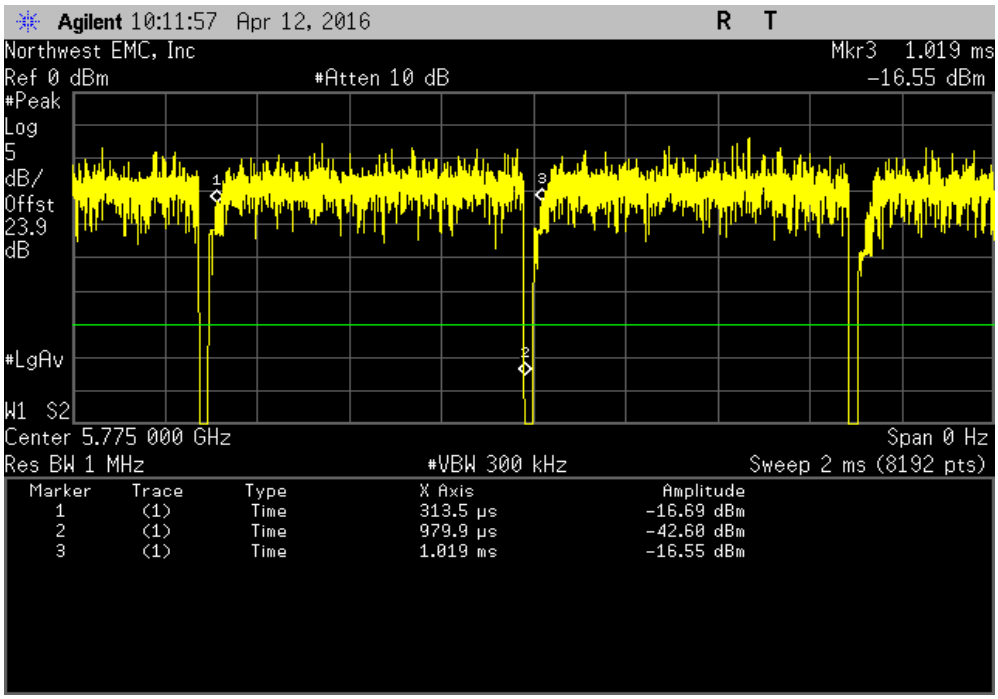


DUTY CYCLE

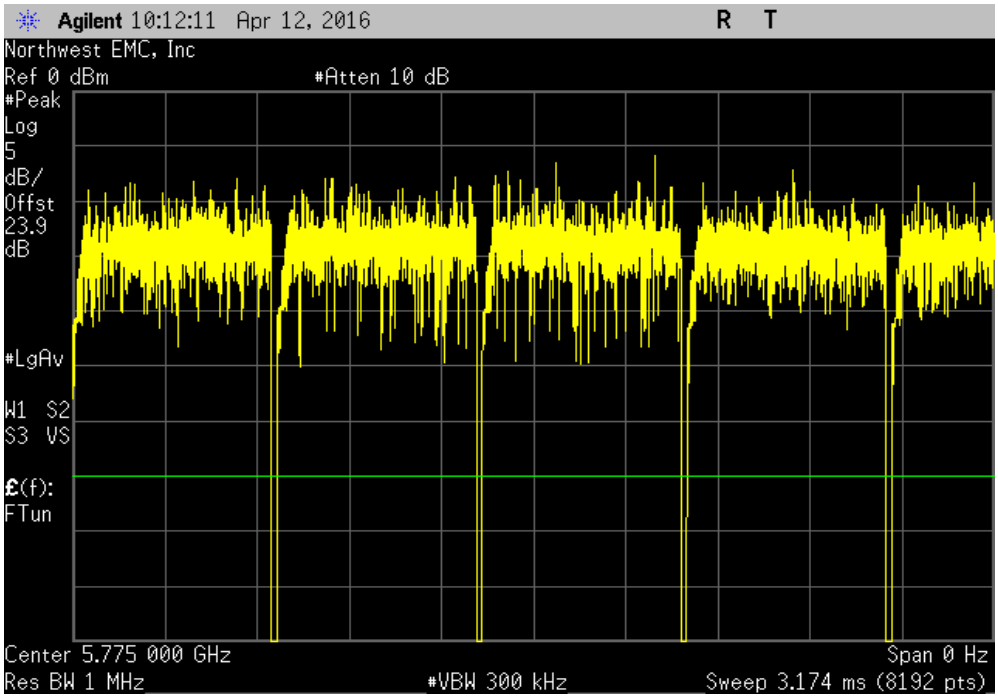
NORTHWEST EMC

XMit 2015.01.14

SISO, Chain B, 80MHz BW, Mid Channel, Ch 149/161 - 5775 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	666.4 us	705.4 us	1	94.5	N/A	N/A



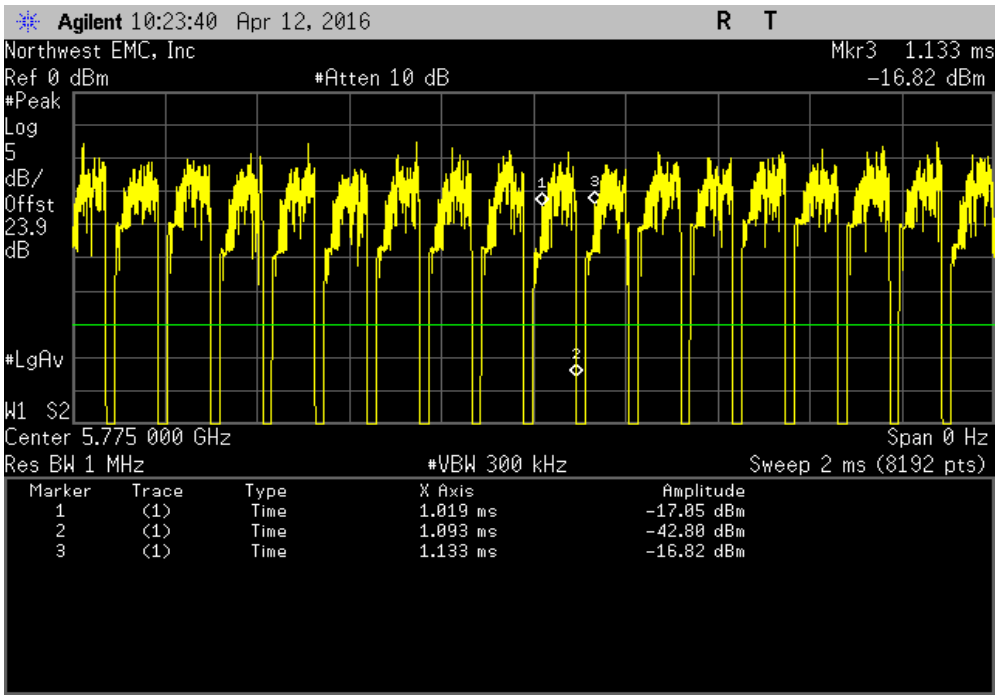
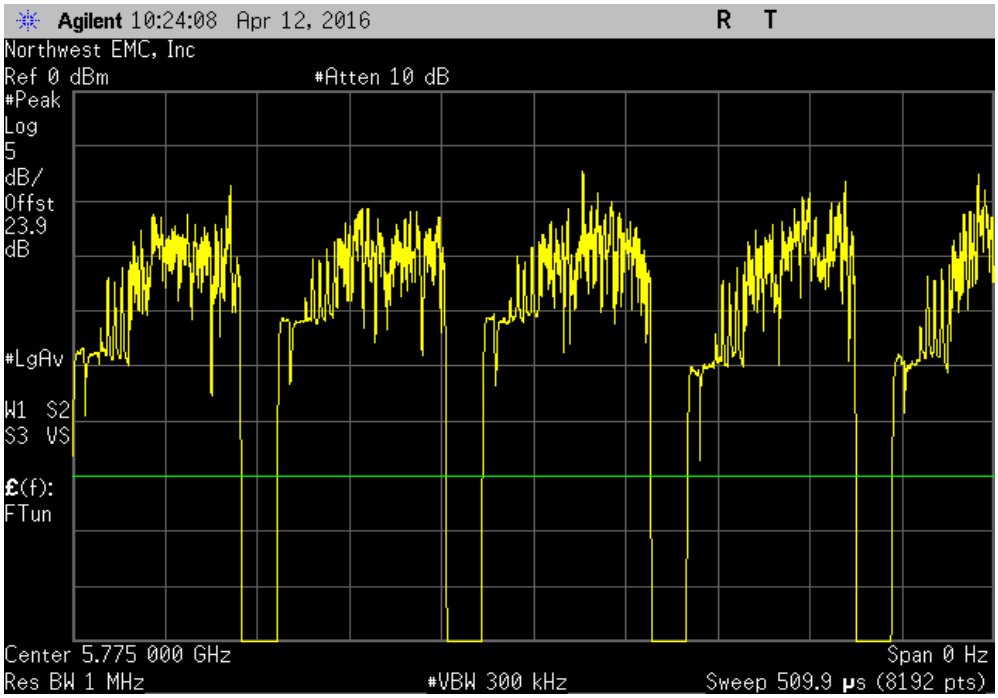
SISO, Chain B, 80MHz BW, Mid Channel, Ch 149/161 - 5775 MHz, 802.11(ac) MCS0						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A



DUTY CYCLE

NORTHWEST EMC
XMit 2015.01.14

SISO, Chain B, 80MHz BW, Mid Channel, Ch 149/161 - 5775 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	74 us	113.3 us	1	65.3	N/A	N/A



SISO, Chain B, 80MHz BW, Mid Channel, Ch 149/161 - 5775 MHz, 802.11(ac) MCS9						
	Pulse Width	Period	Number of Pulses	Value (%)	Limit (%)	Results
	N/A	N/A	5	N/A	N/A	N/A